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ATMOSPHERIC MARINE BOUNDARY LAYER MIXING RATES IN THE CALIFORNI--ETC(U)
MAY 80 G E SCHACHER, C W FAIRALL
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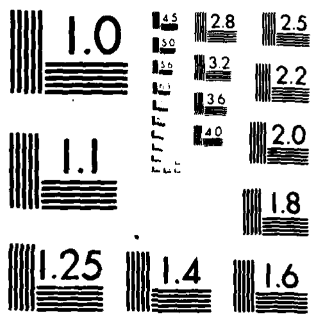

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NAVAL POSTGRADUATE SCHOOL

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ATMOSPHERIC MARINE BOUNDARY LAYER MIXING RATES IN THE CALIFORNIA COASTAL REGION

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May 1980

Approved for public release; distribution unlimited

Prepared for:
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Sacramento, CA 95814

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The work reported herein was supported in part by the California Air Resources Board, Sacramento, California.

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(12) 124 (11) May 80

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER (14) NPS-61-80-003	2. GOVT ACCESSION NO. AD-A087	3. RECIPIENT'S CATALOG NUMBER 364
4. TITLE (and Subtitle) (6) ATMOSPHERIC MARINE BOUNDARY LAYER MIXING RATES IN THE CALIFORNIA COASTAL REGION		5. TYPE OF REPORT & PERIOD COVERED Technical Report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) (10) G.E. Schacher, C.W. Fairall [redacted] K.L. Davidson		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS (9) Technical rept.		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS California Air Resources Board 1709 11th St. Sacramento, CA 95814		12. REPORT DATE
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Marine Boundary Layer, Mixing Rate, Air Pollution

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Naval Postgraduate School has conducted five research cruises in California coastal waters for which sufficient data was obtained to allow boundary layer mixing rates to be determined. These data have been processed to determine the mixing rates. The rates have been correlated with meteorological conditions and geographical location and average values for use in air pollution models have been determined. A simplified method for calculating the mixing rate from mean meteorological parameters is presented.

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S/N 0102-014-6601

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The Naval Postgraduate School has conducted five research cruises in California coastal waters for which sufficient data was obtained to allow boundary layer mixing rates to be determined. These data have been processed to determine the mixing rates. The rates have been correlated with meteorological conditions and geographical location and average values for use in air pollution models have been determined. A simplified method for calculating the mixing rate from mean meteorological parameters is presented.

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Figure 9: Mixing rate, wind speed, and sea-air temperature difference versus time for MABLES-WC cruise (Aug 1978).

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I. Introduction

The rate at which air is mixed throughout the atmospheric boundary layer is one of the determinating factors in air quality. The mixing rate governs how rapidly pollutants from surface sources are transported upward, and thus is one of the factors that determines peak concentration in a given volume. Air pollution models divide a particular air shed area into numerous sections (cells) then solve for temporal variations of pollutant density within each cell using source strength and diffusion within the cell and flux across the cell boundaries as input parameters. Matching conditions at the boundaries leads to an overall solution to the problem. The transport across cell boundaries depends mainly on mean wind speed. The transport out of the top of a cell and vertical dispersion within a cell are due to turbulent mixing.

Many of the model cells are over the water for air sheds along the California coast. In the past, there has been little data available that would allow over ocean mixing rates to be determined so estimates of the rate have been based on overland values. The purpose of the work reported here is to determine the needed mixing rates from available Naval Postgraduate School (NPS) data.

The environmental Physics Group of NPS has conducted several research cruises over the past five years in both the Atlantic and East Pacific, at all times of the year, so that a considerable data base has been developed for a wide range of marine atmospheric conditions. Five of these cruises were conducted in

California coastal waters and the data needed to determine boundary layer mixing rates were collected.

These data have been gathered near enough to the coast to be representative of overwater cells in current air pollution models, and far enough at sea so that open ocean conditions prevail. The immediate areas of the three most populous centers, San Francisco, Los Angeles, and San Diego have been extensively investigated. A wide range of meteorological conditions have been encountered, and operations were carried out around the clock. Thus, the available data base allows determinations of mixing rates and their dependence on location and conditions including diurnal variations. In general, conditions over the water do not vary nearly as much as overland. In California coastal waters conditions are generally unstable with slightly stable encountered occasionally.

II. Instrumentation

The studies of California coastal waters have all been carried out aboard the NPS ship R/V ACANIA, which is equipped to make multilevel mean and fluctuation measurements. Available sensor heights above mean sea level are 1, 4, 7, 14.5, 20.5 meters. For most of the data reported here, 4.2, 7.0, and 20.5 meters were used. Boundary layer properties were determined by three techniques:

1. bulk aerodynamic (air-sea differences)
2. inertial subrange turbulence
3. mean profiles

Rather than list all of the shipboard equipment here, we restrict the description to that which is pertinent to determining mixing rates.[1] The measurements needed and the equipment used were:

Sea surface temperature (T_s)
Air temperature (T_a)
Humidity/Dew Point (T_D)
Relative wind speed and direction (U)
Temperature inversion height (Z_i)
Wind speed fluctuation (U')
Air temperature fluctuation (T')

T_s: 1) Hewlett Packard 2801A quartz thermometer (0.1°C)
2) Barnes PRT-5 infrared thermometer (0.3°C)

The HP sensor is floated and averages to about six inches below the surface.

T_a: Same Hewlett Packard System (± 0.2°C)

Sensors installed in RM Young Gill aspirators. The lower opening of the aspirator has been fitted with a radiation shield which improves its performance.

T_D: General Eastern 1200 AP (T_D, ± 0.3°C)

Dew point measured by cooled mirror technique

U : MRI 1022 (± 0.5 knt, $\pm 10°$)

The cups are low threshold so that 1 knt can be measured. Due to inaccuracies in ship speed true wind error is ± 1 knt, $\pm 15°$ at best.

Z_1: Aerovironment Model 200 acoustic sounder (± 20m)

Enclosure designed for shipboard allows good signal to noise when ship is in motion.

U': TSI 1054B Hot Wire Anemometer

Sensor is 1210 probe mounted with platinum film on quartz cylinder (60 μ) substrate.

T': Sylvania 140 Thermosonde

Sensor is TSI 1210 probe mounted with 2.5 μ platinum wire.

The equipment evolved with time and the equipment described above is the latest version used.

Sensors were mounted on the R/V ACANIA so that the ship disturbs the sampled air as little as possible. The sensors at 1 m height are placed on a bouy foreward of the ships bow (data

from this height is not used here). The 4 m and 7 m sensors were mounted forward of the ship on a mast placed directly on the bow. The 14.5 m level suffers the most ship influence and this data was only used under special circumstances. The 14.5 m and 20.5 m levels were located on a mast aproximately 15 ft. behind the bow. We attempt to obtain data only when the relative wind is within 30° of the bow but this is not always possible. Even with the precautions of best sensor placement and good relative wind direction it has not been possible to obtain reliable wind profiles on the ship.

Several methods of signal processing and data acquisition were used. This gives as much flexiblity as possible in choosing which of the three methods is used in the computations. Only the fluctuation signals require significant processing. Two schemes were used: 1) spatial filtering and 2) frequency filtering. Spatial filtering was accomplished by placing two sensors 0.3 m apart and determining the difference in their responses. This method requires that matched sensors and processing electronics (both dc and ac response) be used. Frequent checks on the senors were made to insure that environmental aging did not cause their responses to differ more than is tolerable. For frequency filtering, a single sensor was used and bandpass filtering, with lower and upper cutoff frequencies of 6 and 200 Hz, was imposed. The 0.3 m seperation and the 6 to 200 Hz bandpass both insure that only fluctuation components in the inertial subrange are utilized. It is necessary to restrict measurements to the inertial subrange

since ship motions introduce signal at lower frequencies, which would lead to incorrect results if these frequencies were used for direct flux estimates.

After spatial or frequency filtering, the rms value of the fluctuation signal is obtained which is then used in subsequent calculations. It is very difficult to obtain matched sensors and to construct a difference bridge for the hot film sensors used for wind speed fluctuation measurements. Thus, only frequency filtering was used for wind speed fluctuations. Both types of filtering were used for temperature fluctuations, but the majority of the results are for the spatial filtering technique.

The third method used to process fluctuation signals was spectral analysis. This can be done only for single sensors. The power spectral density of the inertial subrange signal was determined in-situ with a real time spectrum analyzer. The results were not one of the primary analysis tools, but were used to check the validity of the results from the other techniques. For example: 60 Hz pickup would be apparent by spectral analysis, but would increase the rms signal without the operator's knowledge, and lead to erroneous results. Other equipment problems, and ship influence distortions can also be detected by spectral analysis. Thus, spectra were produced on a frequent and regular basis throughout all cruises. Spectral analysis was performed by Nicolet 440B or Federal Scientific VA500 analyzers.

Data acquisition was straightforward. Fluctuation signals were recorded on a Honeywell 5600 FM tape recorder. All mean and rms signals were acquired and recorded by a Hewlett Packard 3052A

data acquisition system controlled by an HP9825S computer. Complete cycling of the acquisition system through all signals took approximately 1.2 sec. Data was normally acquired for a 30 minute period then averaged, so that each averaging period contains approximately 1200 samples.

The computer performed in-situ calculations of meteorological parameters and recorded the data and results on magnetic tape. An immediate printout of all results was also produced. The immediate printout was very important for a successful operation as it allowed identification of portions of the system that were operating incorrectly.

III. Details of Research Cruises

We report here results from five cruises:[2]

CEWCOM-76, 10/4-10/12, 1976; area covered was from Monterey Bay to San Diego with emphasis on the area south of Pt Conception.

ARB, 7/19-7/26, 1977; area covered was Los Angeles air basin.

CEWCOM-78, 5/14-5/23, 1978; coastal data taken but emphasis on at sea data, San Nicolas Island.

MABLES-WC, 7/31-8/17, 1978; all data taken in San Francisco area from coast to 60 N mi at sea.

Ctq, 6/2-6/8, 1979; Monterey Bay area, all data taken within 10 N mi of coast.

Charts for these cruises follow so that the results can be correlated with the ships location with respect to the coast. Dates shown on the charts indicate the location at 0000, local time, except where the time is indicated.

The chart shown for MABLES-WC covers only the time period from 8/2 to 8/4. The remainder of the time was spent along latitude 37°10'N at three stations located at longitudes: A--122°40'W, B--123°15'W, C--123°50'W. The schedule for the three stations is shown in Table 1.

Table 1. Ship schedule for MABLES-WC boundary layer study.

Date/Time	0400	1000	1600	2200
8/4			B	C
5	C	B	A	A
6	B	C	C	B
7	A	A	B	C
8	C	B	A	A
9	B	C	B	B
10	A	B	C	C
11	B	A	B	C
12	C	B	A	A
13	B	C	C	B
14	A	A	B	C
15	C	B	A	A
16	B	C	C	B
17	A	A		

Weather permitting, the ship sailed at full ahead between stations. It arrived at each station at least one hour before and left approximately one hour after the appointed time. The ship was positioned downwind of the station at a distance such that it would cross the station at the appointed time by sailing slow ahead into the wind. The charts for the CEWCOM-76 cruise do not show the ships location from 10/9-1100 to 10/10-1200. The only mixing rate data for which no position is shown occurred after 0700 on 10/10. During this time the ship was immediately north of Pt. Conception within 10 kmi of shore.

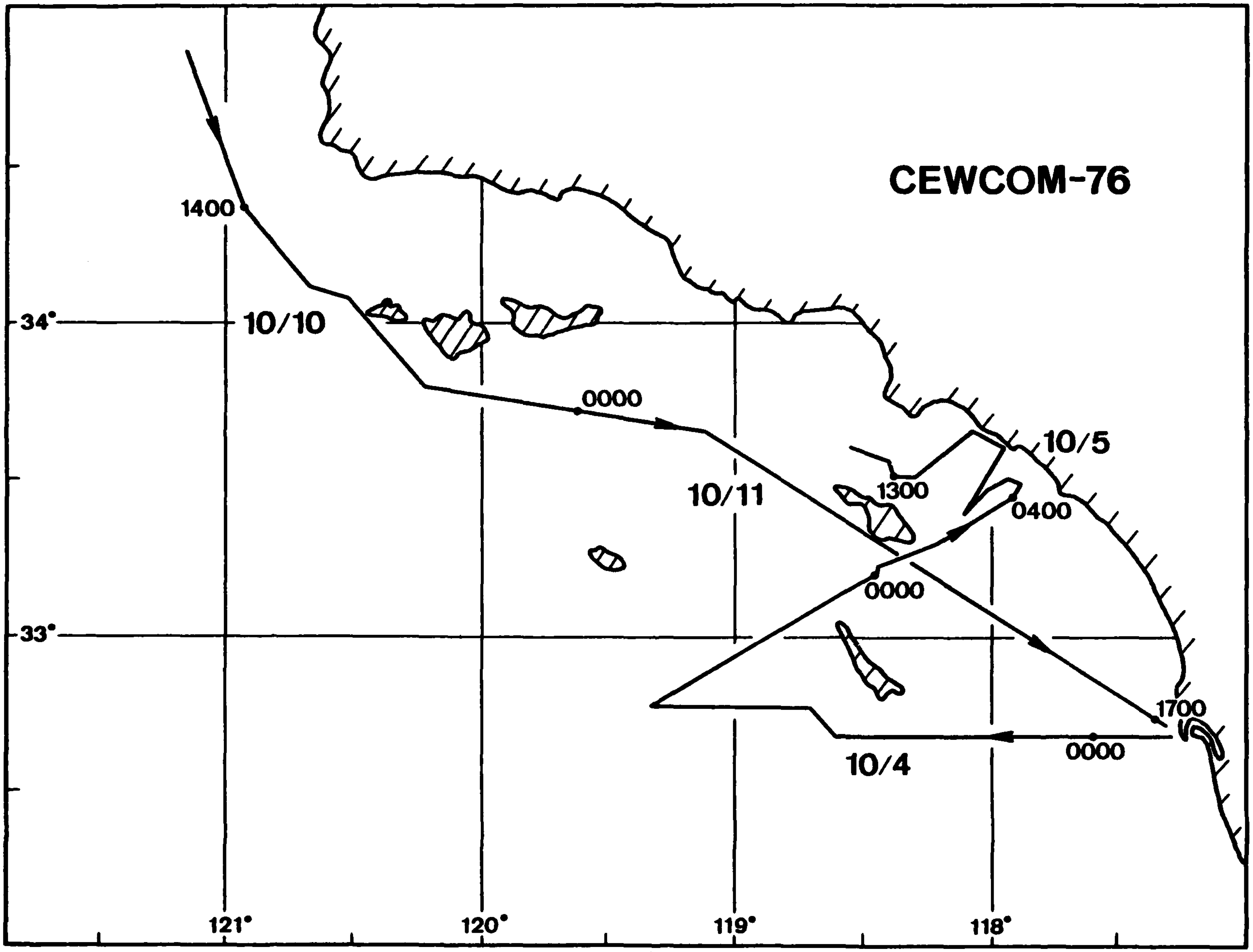
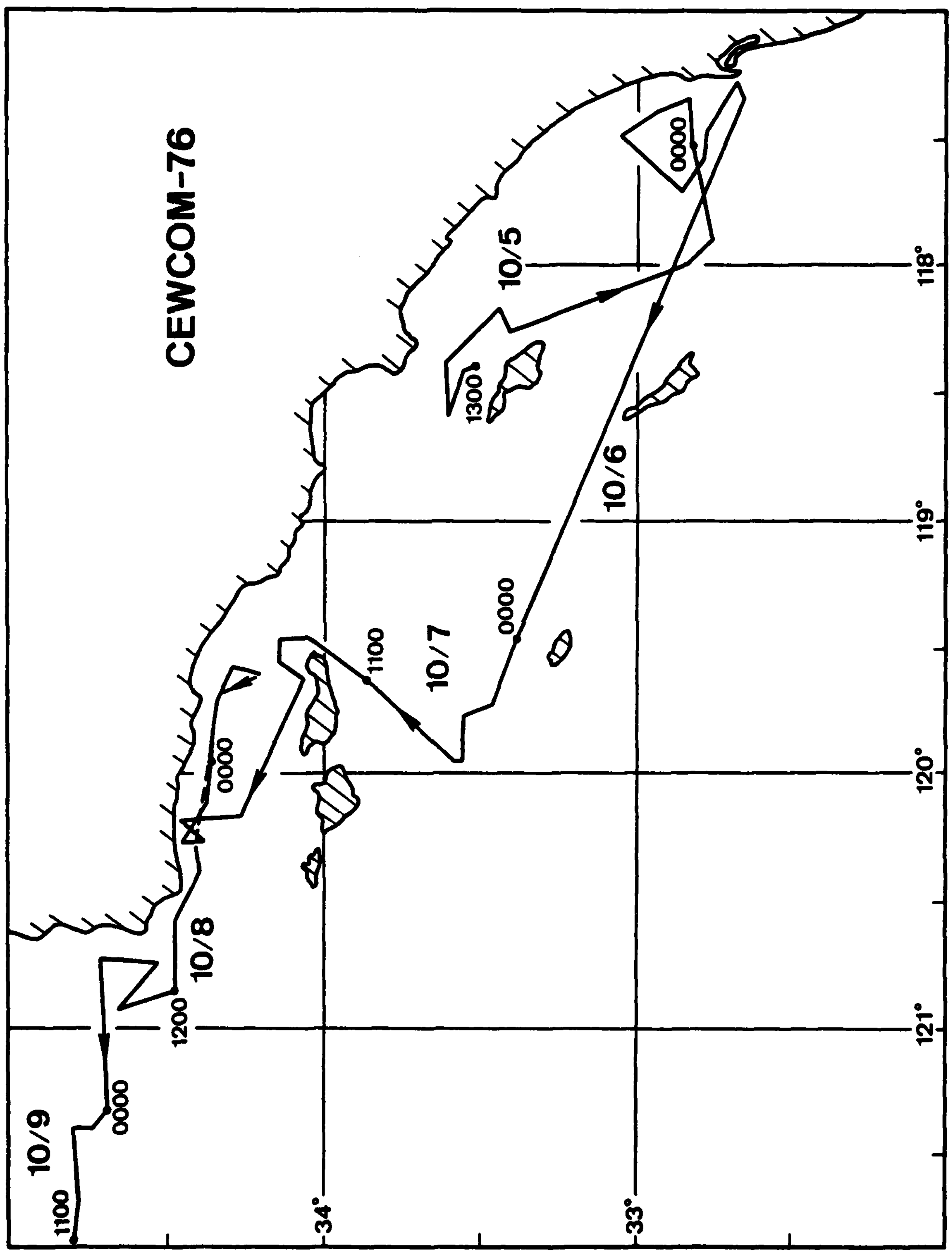

CEWCOM-76
10/10
10/11
10/5
10/4
1400
0000
1300
0400
0000
1700
0000
34°
33°
121°
120°
119°
118°

Figure 1a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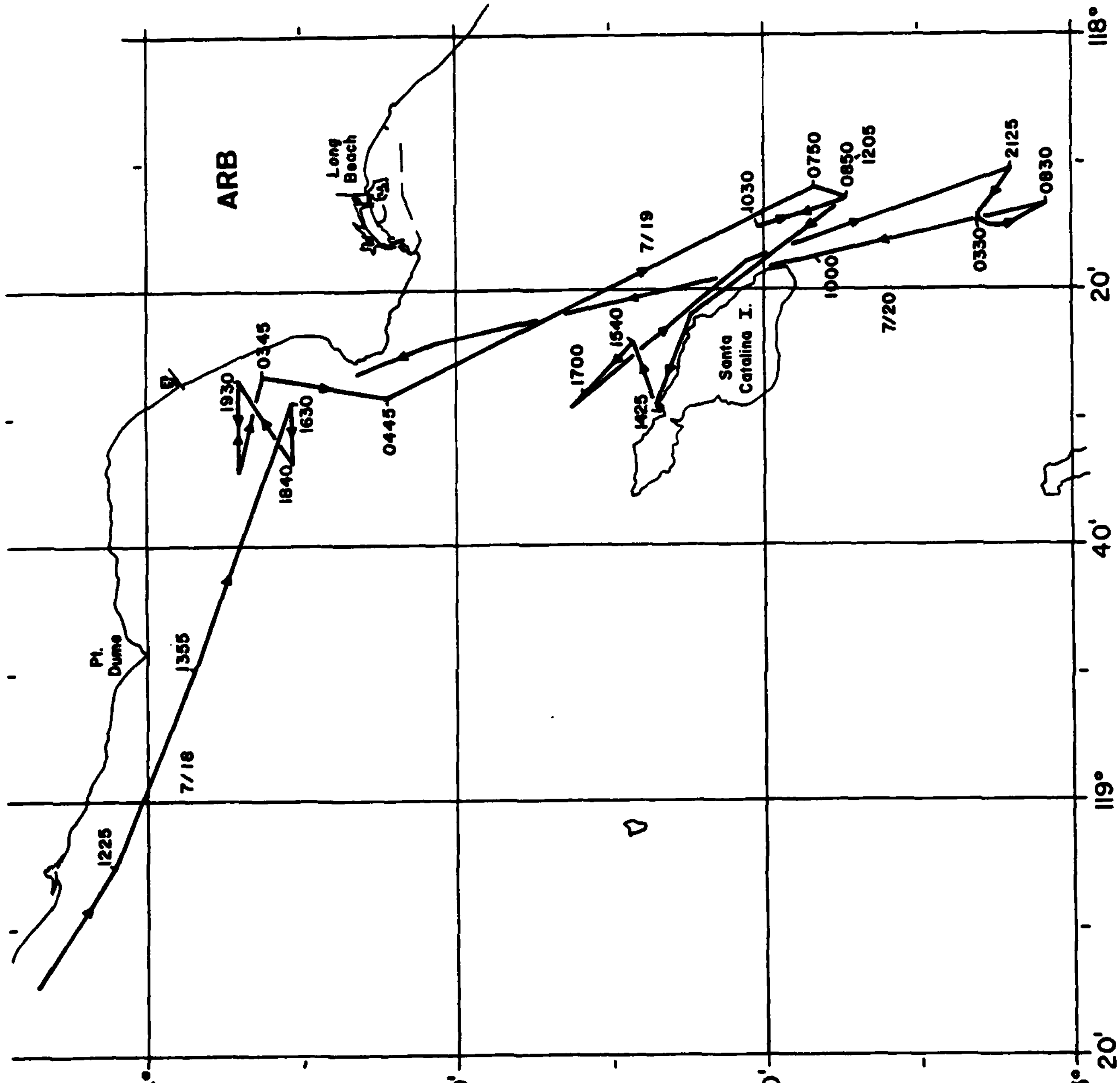
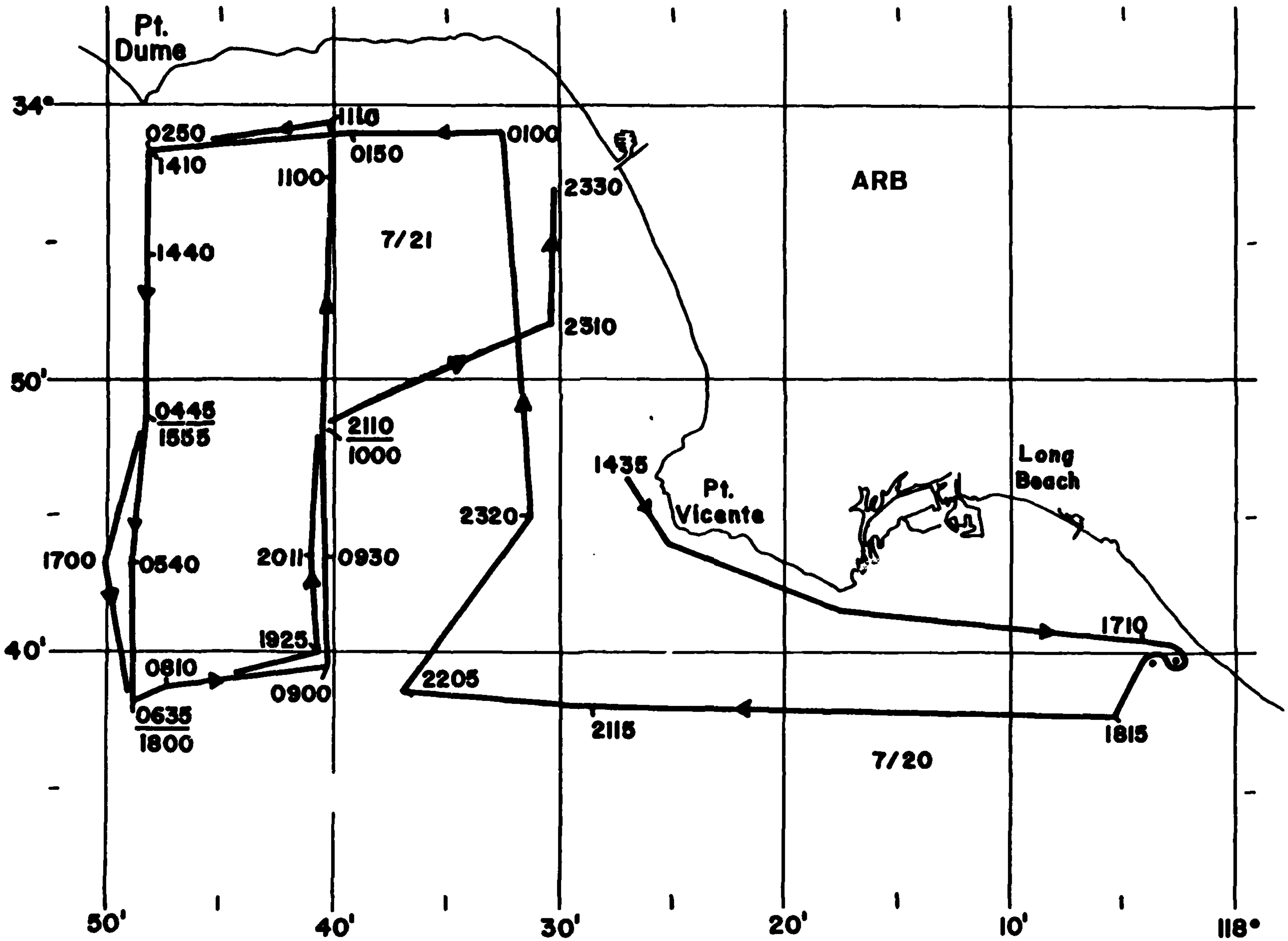
10/5
0000
1300
10/6
0000
1100
10/7
0000
10/8
1200
10/9
0000
1100
118°
119°
120°
121°
34°
33°
Figure 1b



ARB
Long Beach
Pt. Dume
Santa Catalina I.
7/18
7/19
7/20
1225
1355
0345
0445
1930
1630
1840
1700
1540
1425
1030
0750
0850
1205
1000
2125
0830
0330
34°
40'
20'
33°
118°
20'
40'
119°
20'

Figure 2a



Pt. Dume
34°
50'
40'
ARB
7/21
7/20
Pt. Vicente
Long Beach
0250
1410
1440
0445
1555
0540
1700
0810
0635
1800
1116
0150
1100
2110
1000
2011
0930
1925
0900
0100
2330
2310
2320
2205
2115
1435
1710
1815
50'
40'
30'
20'
10'
118°

Figure 2b

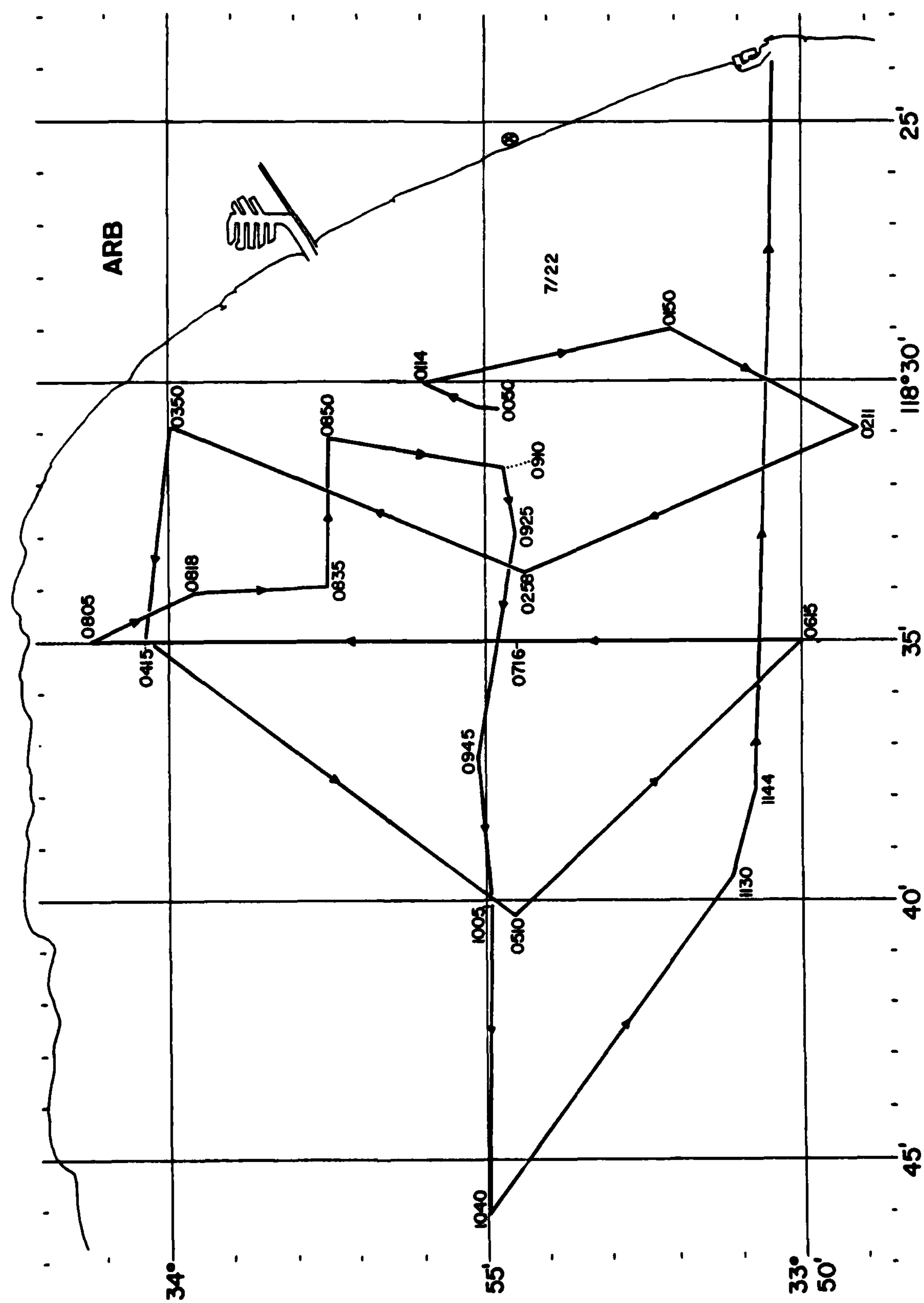
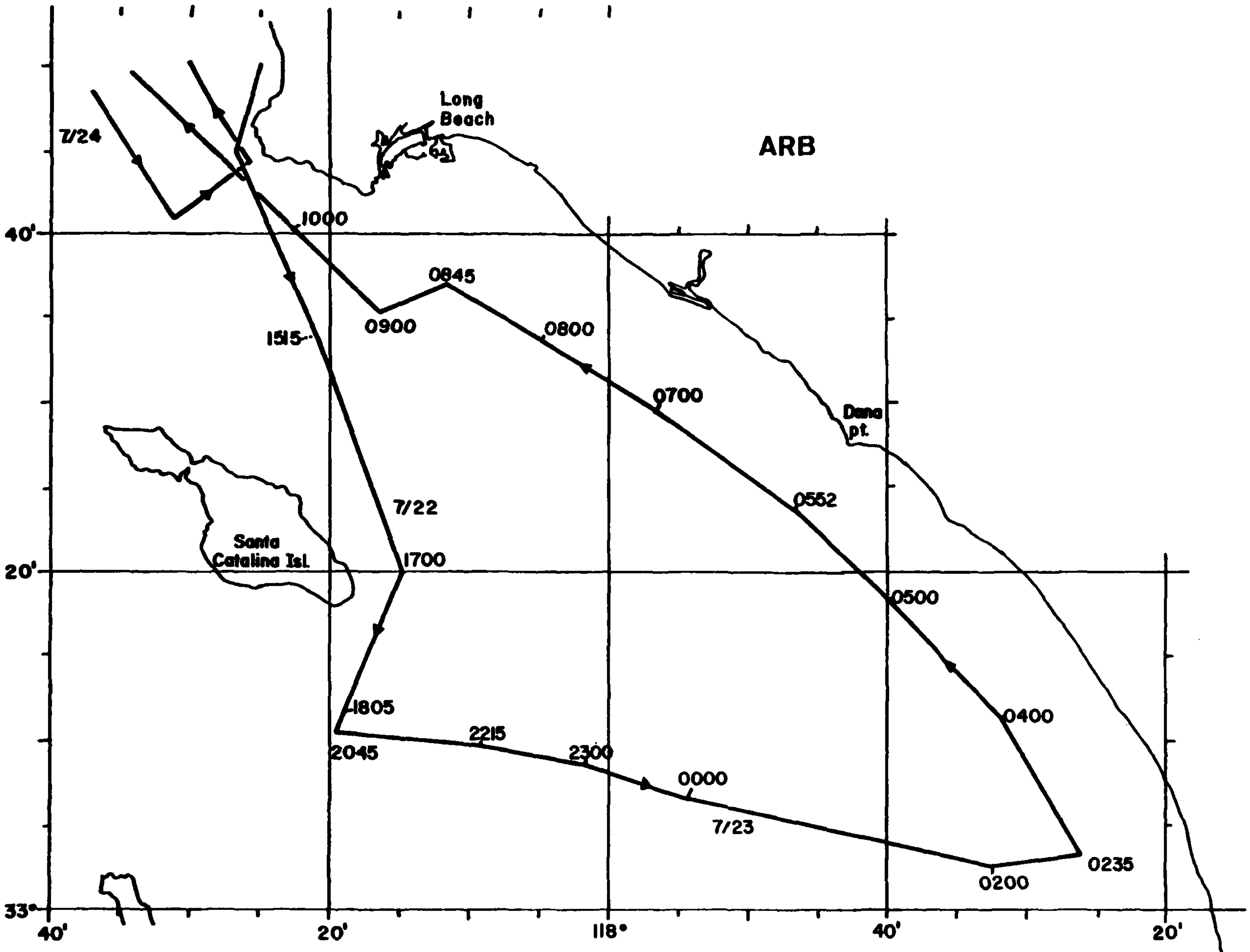
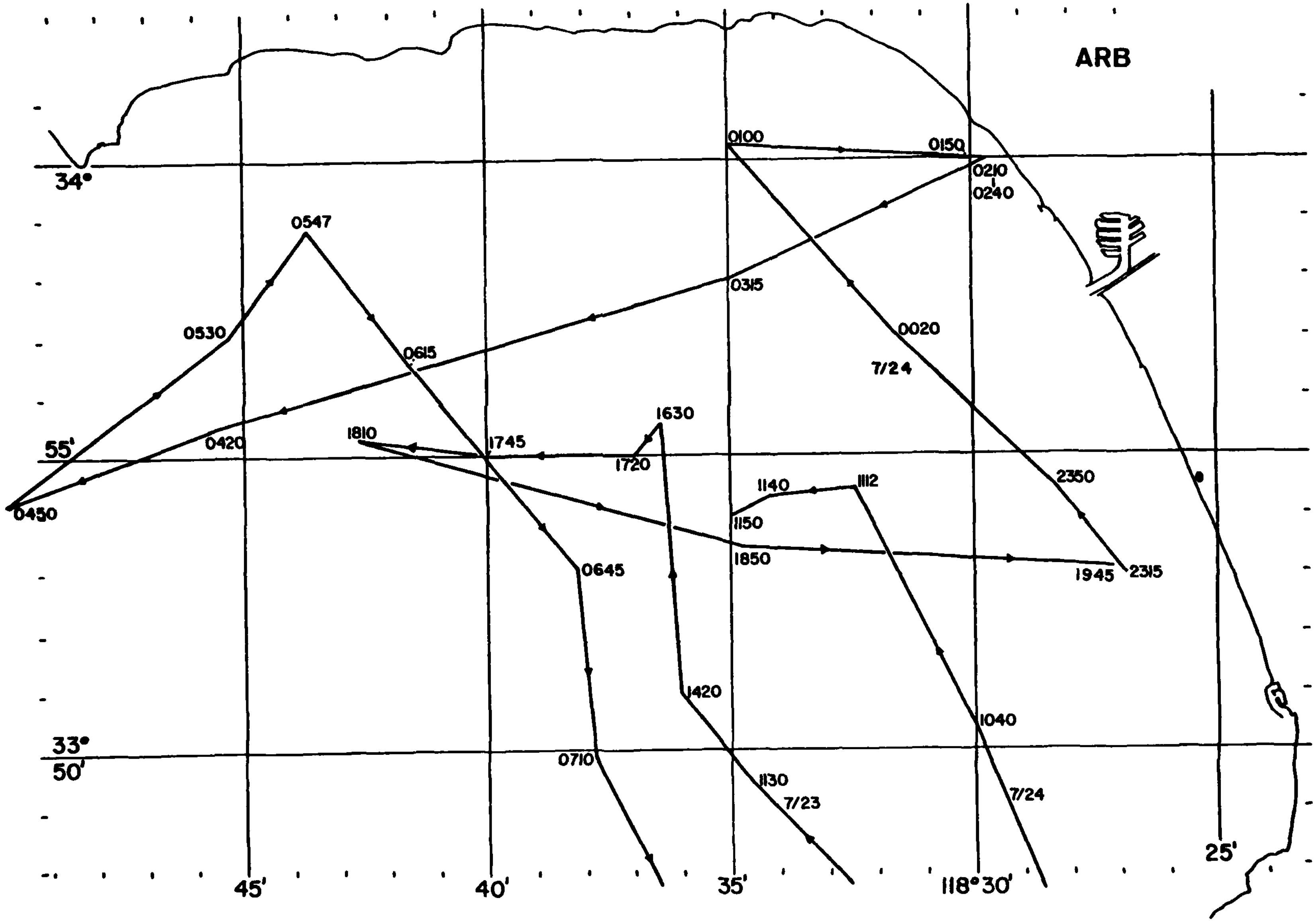

ARB
7/22
0150
0114
0050
0211
0350
0850
0910
0925
0258
0818
0835
0805
0415
0615
0716
0945
1144
1130
1005
0510
1040
34°
55'
33°
50'
25'
118°30'
35'
40'
45'

Figure 2c



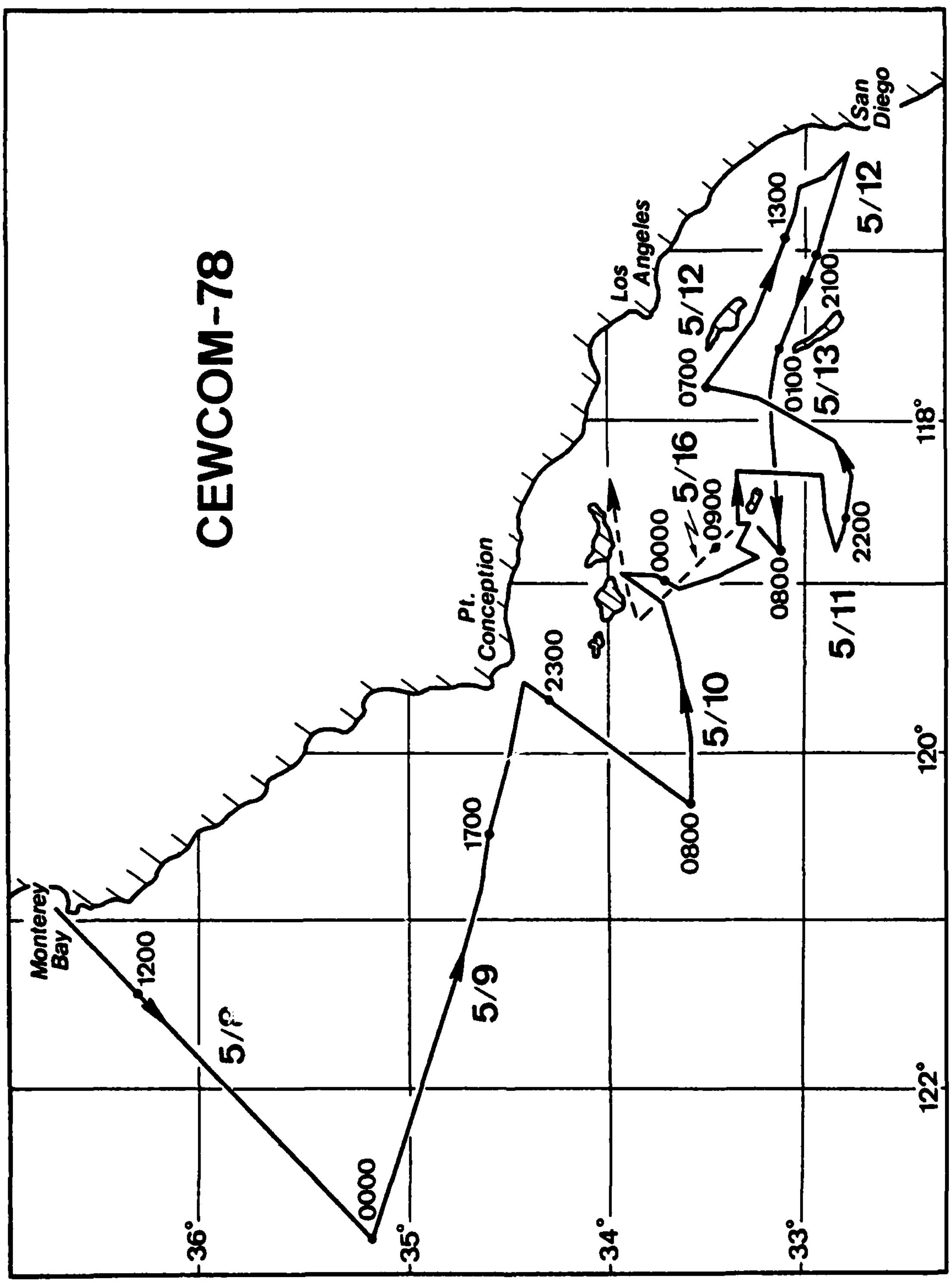
ARB
Long Beach
Dana pt.
Santa Catalina Isl.
7/24
7/22
7/23
1000
0845
0900
0800
0700
0552
0500
0400
0235
0200
1515
1700
1805
2045
2215
2300
0000
40'
20'
33°
40'
20'
118°
40'
20'

Figure 2d



ARB
34°
55'
33°
50'
45'
40'
35'
118°30'
25'
0100
0150
0210
0240
0315
0020
7/24
0547
0530
0615
0420
0450
1810
1745
1720
1630
1140
1112
1150
1850
2350
1945
2315
0645
1420
1040
0710
1130
7/23
7/24

Figure 2e



CEWCOM-78
Monterey Bay
Pt. Conception
Los Angeles
San Diego
1200
0000
5/9
1700
2300
0800
5/10
0000
0900
5/16
0800
5/11
2200
0700
5/12
0100
5/13
2100
1300
5/12
36°
35°
34°
33°
122°
120°
118°

Figure 3a

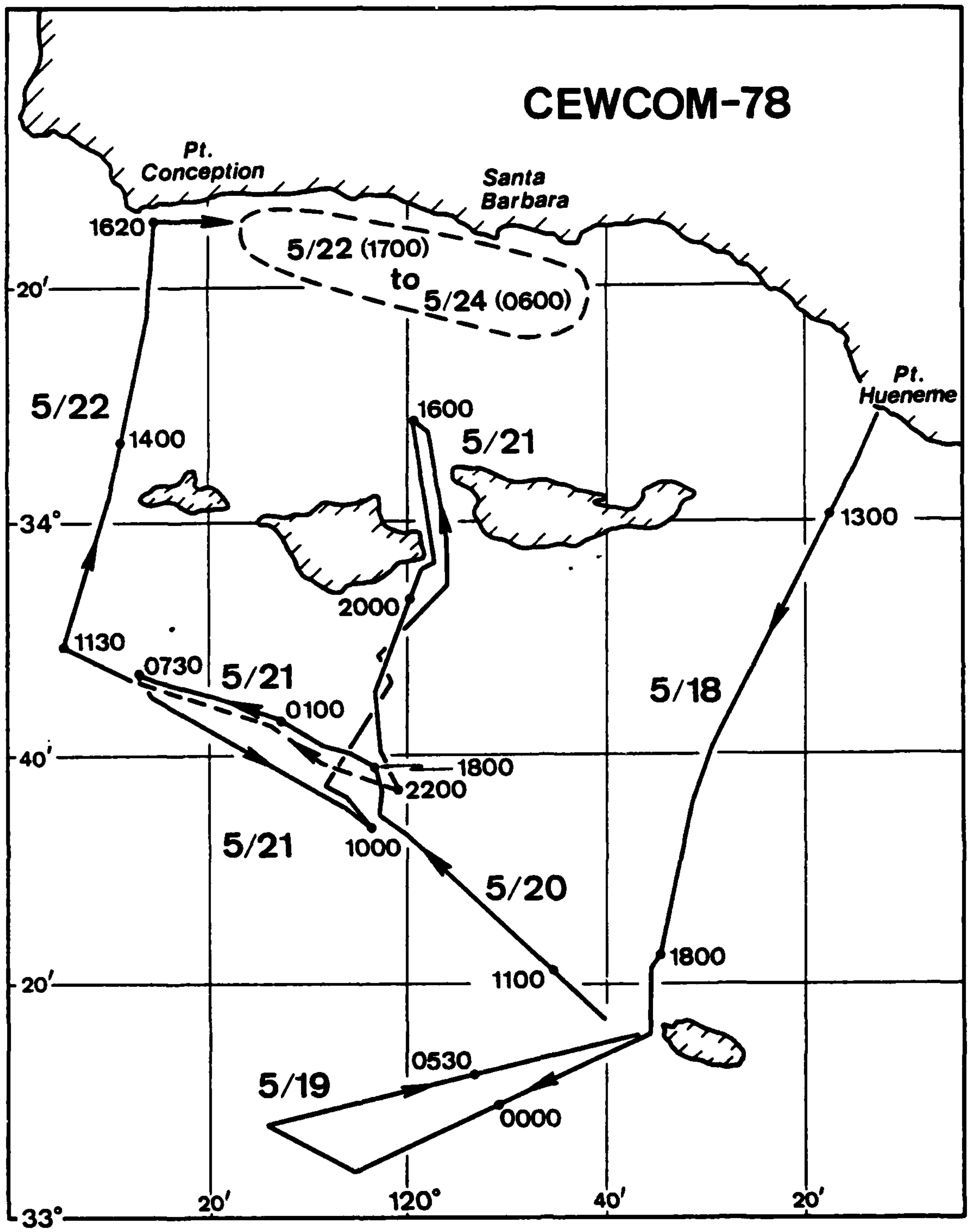

CEWCOM-78
Pt.
Conception
Santa
Barbara
1620
5/22 (1700)
to
5/24 (0600)
20′
5/22
1400
1600
5/21
Pt.
Hueneme
34°
1300
2000
1130
0730
5/21
0100
5/18
40′
1800
2200
5/21
1000
5/20
1800
1100
20′
0530
5/19
0000
33°
20′
120°
40′
20′

Figure 3b

MABLES-WC

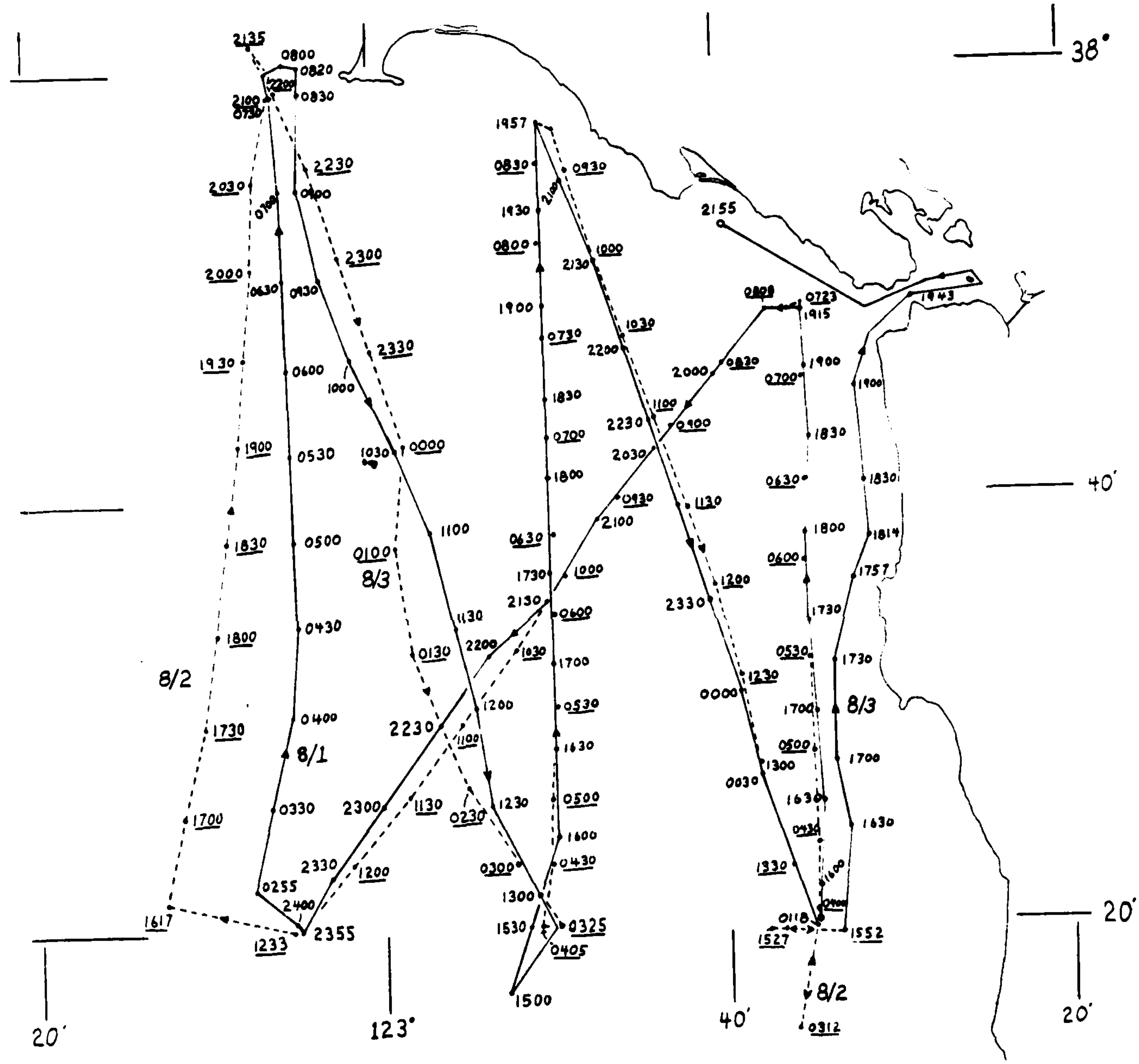


Figure 4

IV. Data Analysis

The primary purpose of this work is to determine boundary layer mixing rates and to attempt to relate the rates in a consistent manner to local conditions. For each time period, the stability, U_*, T_*, mixing rate, and mixing time were determined. We have found that the bulk and turbulence methods were the best to use for data analysis. Both methods were used to process these data but only the bulk results are reported. The turbulence results were used to check the validity of the output.

In this section we describe the methods used to reduce the data. The spectral analysis technique will also be described for sake of completeness. The key to the analysis is the determination of hydrostatic stability and the resultant stability correction functions that must be used to determine final parameters. As will be seen, this is an iterative process that is best done by computer.

In what follows we use the notation:

T	temperature (K)
Z	height (m)
U	mean wind speed (m/sec)
q	water vapor mixing ratio
$\theta = T + .0098Z$	potential temperature
$\theta_v = \theta + .61Tq$	virtual potential temperature
g	acceleration due to gravity
κ	von Karman's constant (0.35)
k	wavenumber
f	frequency
α_x	turbulent diffusivity ratio ($\alpha_u = 1$)
$U_\star$	friction velocity (scaling velocity)
$q_\star$	mixing ratio scaling parameter
$T_\star$	scaling temperature
$\omega_\star$	mixing rate
Z_o	roughness length
L	Monin-Obukhov length
Z_i	inversion height
X	atmospheric parameter (T, q or U)
e_x	drag coefficient
ξ	Z/L
$\varphi(\xi)$	gradient stability function
$\psi(\xi)$	profile stability function
$f(\xi)$	stability function

$\varphi_\varepsilon(\xi)$	dissipation stability function
ε	turbulent kinetic dissipation rate
C_X	structure function
S_X	power spectral density

We describe the stability with the Monin-Obukhov length

$$L = \frac{T\ U_*^2}{\kappa g\ \theta_{v*}} \tag{1}$$

The scaling parameters are related to the gradients by

$$\frac{dX}{dZ} = \frac{X_*}{\alpha_X\ \kappa\ Z}\ \varphi_X(\xi) \tag{2}$$

Current best evidence shows that transport of the scalars, heat and water vapor, obey the same relationship to their gradients. Thus, $\varphi_T = \varphi_q$ and $\alpha_T = \alpha_q = 1.35$. The stability correction functions are:[3]

$$\begin{aligned} \varphi_T(\xi) &= (1 - 9\xi)^{-1/2} & \xi < 0 \qquad \varphi_u(\xi) &= (1 - 15\xi)^{-1/4} \\ &= (1 + 6.4\xi) & \xi > 0 \qquad &= (1 + 4.7\xi) \end{aligned} \tag{3}$$

Bulk Method

To obtain the stability the scaling wind speed and temperature are needed for use in Equation 1. They are obtained from bulk measurements using an integrated form of Equation 2. We integrate Equation 2 from the surface to a reference height Z, usually 10 m.

$$X_Z - X_s = \frac{X_*}{\alpha\kappa} \int_0^Z \frac{\varphi_X(\xi)}{Z}\, dZ$$

$$= \frac{X_*}{\alpha\kappa}\left[\ln\frac{Z}{Z_{oX}} - \psi_X(\xi)\right] \tag{4}$$

where X_s is the surface value.

For analysis of data, it is most convenient to solve Equation 4 for X_* and rewrite in terms of the drag coefficient. The neutral stability drag coefficient is given by

$$\mathcal{C}_{XN}^{\frac{1}{2}} = \frac{\alpha\kappa}{\ln Z/Z_{oX}} \tag{5}$$

and corrected for stability by

$$\mathcal{C}_X^{\frac{1}{2}} = \mathcal{C}_{NX}^{\frac{1}{2}}\left[1 - \psi_X(\xi) C_{NX}^{\frac{1}{2}}/\alpha\kappa\right]^{-1} . \tag{6}$$

Thus the scaling parameter is given by

$$X_* = \mathcal{C}_X^{\frac{1}{2}}(X_Z - X_s) \tag{7}$$

As was stated above the key to the analysis is obtaining the stability. From Equation 1 we write ξ as

$$\xi = \frac{\kappa g Z}{T}\, \frac{\theta_* + 0.61\, Tq_*}{U_*^2} \tag{8}$$

For the humidity correction term, we use T = 15°C and approximate $0.61\, T \simeq 0.18$ (q in gm/kg). Rewriting in drag coefficient form gives for neutral stability.

$$\xi_o = \frac{\kappa g Z}{T}\, \frac{\mathcal{C}_{TN}^{\frac{1}{2}}}{\mathcal{C}_{UN}}\, \frac{(T - T_s) + 0.18\,(q - q_s)}{U^2} \tag{9}$$

where we assume zero wind speed at the surface. Using Equations 6, 8, and 9 gives

$$\xi = \xi_0 \frac{[1 - \psi_n(\xi)\mathcal{C}_{UN}^{\frac{1}{2}}/\kappa]^2}{1 - \psi_T(\xi)\mathcal{C}_{TN}^{\frac{1}{2}}/\alpha\kappa} \tag{10}$$

The procedure used to analyze bulk data is as follows:

1. Calculate q and q_s from the measured T_s, T and relative humidity for Z = 10 m and assuming humidity - 100% at the surface.

2. Use $C_{TN} = 1.3 \times 10^{-3}$ and C_{UN} from the table below and the measurements to obtain ξ_o.

3. Calculate ψ_u and ψ_T.

4. Calculate ξ from Equation 10.

5. Iterate steps 3 and 4 until the desired accuracy is obtained, giving ξ.

6. L has been determined and U_*, T_*, and q_* are obtained directly from Equation 7.

For Z = 10 m the wind drag coefficient is found from[4]

U (m/sec)	$\mathcal{C}_{UN} \times 10^3$
0.3 - 2.2	$1.08\ U^{-1.5}$
2.2 - 5.0	0.77 + 0.086U
5 - 8	0.87 + 0.067U
8 - 25	1.2 + 0.025U

The profile stability functions are

$$\psi_T(\xi < 0) = 2\ \ell n\left(\frac{1+x}{2}\right) \qquad \text{for } x = (1 - 9\xi)^{\frac{1}{2}}$$

$$\psi_T(\xi > 0) = -6.5\xi \tag{11}$$

$$\psi_u(\xi < 0) = 2\ \ell n\left(\frac{1+x}{2}\right) + \ell n\left(\frac{1+x^2}{2}\right) - 2\tan^{-1}x + \frac{\pi}{2}$$

$$\text{for } x = (1 - 15\xi)^{1/4} \qquad (12)$$

$$\psi_u(\xi > 0) = -\ 4.7\xi$$

Turbulence Method

The turbulence method of data analysis uses the relationship between the structure function and the scaling parameter

$$C_X{}^2 = X_*{}^2\ Z^{-2/3}\ f_X(\xi) \qquad (13)$$

with

$$\begin{aligned} f_T(\xi) &= 4.9(1 - 7\xi)^{-2/3} & \xi < 0 \qquad f_u(\xi) &= 4(1 + 0.5|\xi|^{2/3}) \\ &= 4.9(1 + 2.4\xi^{2/3}) & \xi > 0 \qquad &= 4(1 + 2.5\xi^{2/3}) \end{aligned} \qquad (14)$$

It is more usual to use ε rather than $C_u{}^2$. They are related by

$$C_u{}^2 = 2\ \varepsilon^{2/3} \qquad (15)$$

The scaling velocity and the dissipation are related by

$$\varepsilon = (U_*{}^3/\kappa Z)\varphi_\varepsilon(\xi) \qquad (16)$$

with

$$\begin{aligned} \varphi_\varepsilon(\xi < 0) &= (1 + 0.5|\xi|^{2/3})^{3/2} \\ \varphi_\varepsilon(\xi > 0) &= (1 + 2.5\xi^{2/3})^{3/2} \end{aligned} \qquad (17)$$

Turbulence measurements in the inertial subrange yield C_X^2 directly. The power spectral density, $S_X(k)$, of the inertial subrange portion of the turbulence is[5]

$$S_X(k) = 0.25\ C_X^{\ 2}\ k^{-5/3} \tag{18}$$

The spectral density is measured as a function of frequency. Using the frozen turbulence hypothesis $k = 2\pi f/U$ and $f\ S_X(f) = k\ S_X(k)$ gives

$$C_X^{\ 2} = 4\ S_X(f)(2\pi/u)^{2/3}\ f^{5/3} \tag{19}$$

Measuring the squared mean difference signal from two sensors separated a distance d gives the structure function directly:

$$C_X^{\ 2} = \overline{[X(r) - X(r + d)]^2}/d^{2/3} \tag{20}$$

If the fluctuation signal from a single sensor is bandpass filtered at lower and upper wavenumbers k_ℓ and k_u then the rms fluctuation signal squared is

$$(X'_{rms})^2 = \int_{k_\ell}^{k_u} S_X(k)\ d\ k \tag{21}$$

Substituting Equation 18, integrating and using the frozen turbulence hypothesis gives

$$C_X^{\ 2} = \frac{8}{3}\left(\frac{2}{u}\right)^{2/3} (X'_{rms})^2\ [f_\ell^{\ -2/3} - f_u^{\ -2/3}]^{-1} \tag{22}$$

Thus, a measurement of the rms signal yields C_X^2 directly.

Mixing Rate

The scaling parameters described above apply to, and specify the

state of the surface layer. The surface layer momentum, heat and water vapor fluxes can be determined from scaling parameters by

$$F_m = U_*^{\,2}$$

$$F_h = U_* \, \theta_*$$

$$F_q = U_* \, q_* \tag{23}$$

The F_h in Equation 23 is the sensible heat flux. (The virtual heat flux and hence θ_{v_*} is needed to calculate the mixing rate.) The depth over which the surface scaling applies is approximately $|L|$. Above the surface layer (ignoring the transition is the well mixed layer region), surface scaling no longer applies and new scaling length, velocity, and temperature are needed. These are: [6]

$$Z_i$$

$$\omega_* = [(g/T) \, Q_o \, Z_i]^{1/3} \tag{24}$$

$$H_* = Q_o/\omega_*$$

We assume that the boundary layer depth is defined by the inversion height, Z_i. Q_o is the surface virtual heat flux.

ω_* is the scaling velocity in the well mixed layer, and we assume that this velocity is directly related to the boundary layer mixing rate. Previous SF_6 tracer experiments performed by California Institute of Technology in cooperation with NPS have shown that ω_* computed by the above method closely predicts the tracer experiment results. This is the currently available verification for using ω_* as the predicted mixing rate.

The boundary layer depth, Z_1 used in Equs. 24 cannot always be taken as the inversion height. During times when there is a stratus layer, the lower edge of the stratus forms a boundary above which condensation must be taken into account in the heat balance. For such conditions Equs. 24 apply to the volume of air below the stratus, and this height should be used for Z_1. If the inversion height is used, the calculated mixing rate will be somewhat in error. This will not be serious for most conditions since the height appears to the one third power in the expression.

RESULTS

There is no accepted, nor simple, manner to present the results of a study of this type. The parameter of interest, the mixing rate, depends on the full range of atmospheric parameters, wind, heat flux, stability, boundary layer height, etc. These parameters are influenced by proximity to land, which can also lead to diurnal variations due to the solar cycle. Since all parameters can change with time, and their variations are not simply related, one cannot relate the mixing rate to one or two basic parameters. Of course given a complete set of meteorological measurements the mixing rate can be calculated from Equation 24.

Our purpose here is twofold: 1) provide a simplified method to calculate the mixing rate from locally measured meteorological parameters, 2) catalog average values of the mixing rate that can be used to improve current air pollution models. The average values presented will be appropriate to location, time, and generalized local conditions.

Tabular data and results are presented in appendices A and B. Appendix A is the basic meteorological data: wind speed, relative humidity, air and sea temperature, and inversion height. The air sea temperature difference is included since it and the wind speed are the determining factors for the stability and heat flux. The final entry is the heat flux, which together with the inversion height, gives the mixing rate (Equation 24). Appendix

B consists mainly of calculated parameters. The wind speed and direction, and the inversion height are included as references. The wind direction is especially useful here since it can be used to differentiate local (land and sea breeze) circulations. The tables also include the stability (Z/L), the scaling parameters U_*, T_*, the mixing rate ω_*, and the total mixing time. The total mixing time is the time it takes to move a parcel of air from the surface to the top of the marine layer (or vice-versa).

Note that there are many entries missing from the tables. This is due to one sensor failing during a time period or to stable conditions. The theory is invalid for stable conditions, which occur a very small percentage of the time. The valid data for the time period is included in order to maintain as complete a record as possible.

Figures 5-9 show all of the mixing rate results, where the rate is plotted as a function of time for the full period of each cruise. All plots except MABLES-WC show these results for one-half hour averaging periods. The shaded areas at the bottom of the graphs show times when the ship was near shore. Since the C_{tq} and ARB cruises were mostly near shore, no shading is shown. The MABLES-WC data appears in a special format which will be discussed seperately.

Several general results are immediately apparent from a cursory examination of these plotted results:

1) Value range from 0.2 to 0.8 m/sec

2) Low values generally occur near land

3) Fluctuations from one one-half hour period to the next as

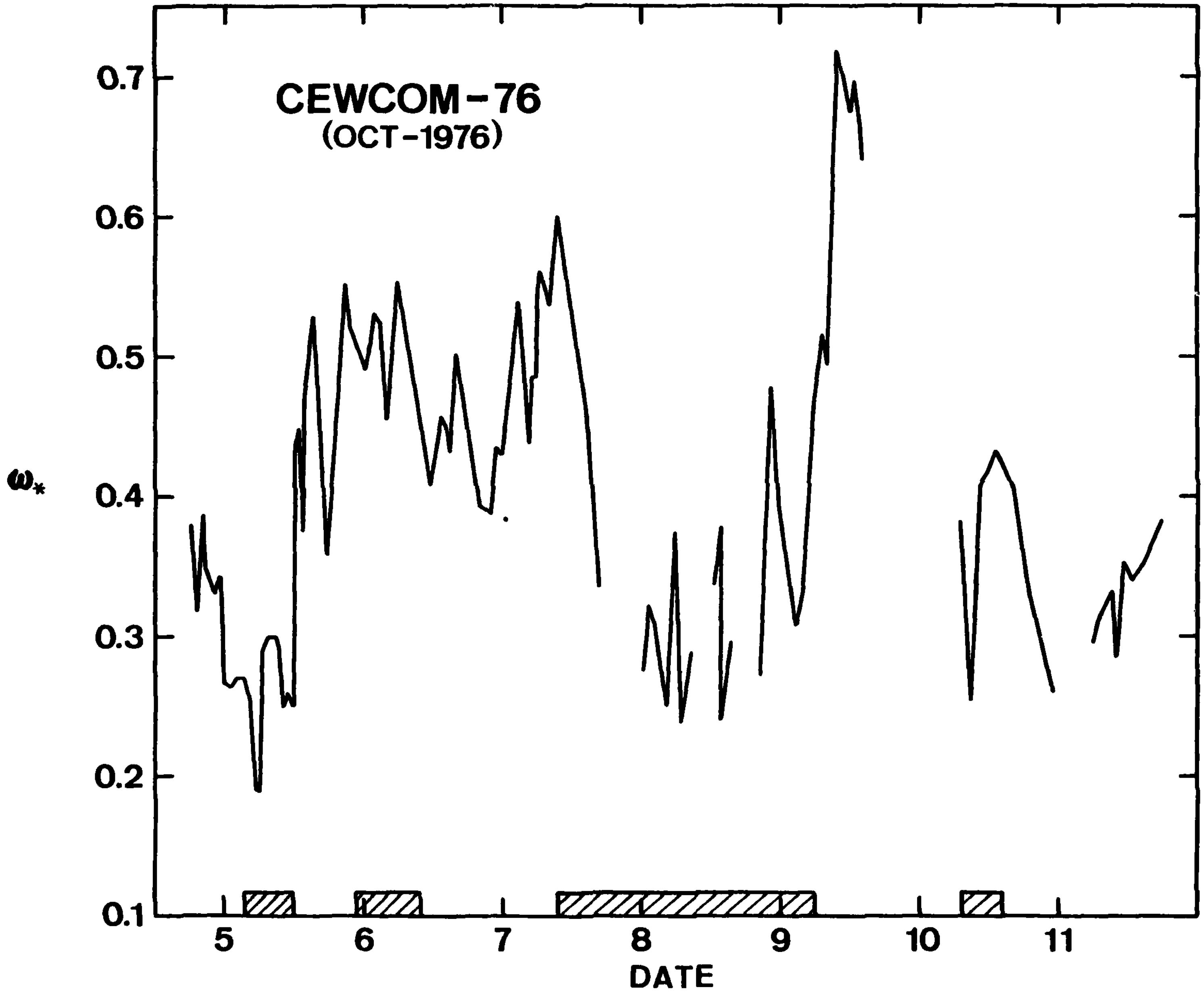


Figure 5

large as 0.2 m/sec are to be expected.

The fluctuations are attributed to both changes in wind speed and air-sea temperature difference. In many cases the ship was underway while the data was being taken, which accounts variations in observed sea surface temperature, and hence air-sea temperature difference, over short periods of time. When the ship was at a stationary location, large changes in mixing rate due to wind speed fluctuations were observed. This was especially evident near the shore.

In general, conditions along the California coast were found to be quite consistent both spatially and temporally. We now summarize the principle features of the results from each cruise in order to illustrate the important parameters.

CEWCOM-76 (Figure 5): The ship operated in the area extending from about 100 N mi north of Pt. Conception to San Diego for the period covered in this report. Near shore values of ω_* were approximately 0.3 m/sec except for 10/6 when the value was $\sim$0.5 m/sec due to a fairly large air-sea temperature difference ($\Delta T \sim 2°C$). The low values on 10/5 occured when wind speed and air-sea temperature difference were simultaneously low. The rapid decrease of ω_* in the afternoon of 10/7 was associated with the lowering of the inversion base as the ship neared shore (refer to Equation 24). The larger values on 10/9 were associated with a large $\Delta T \sim 3°C$.

ARB (Figure 6): The ship operated in the Los Angeles to San Diego

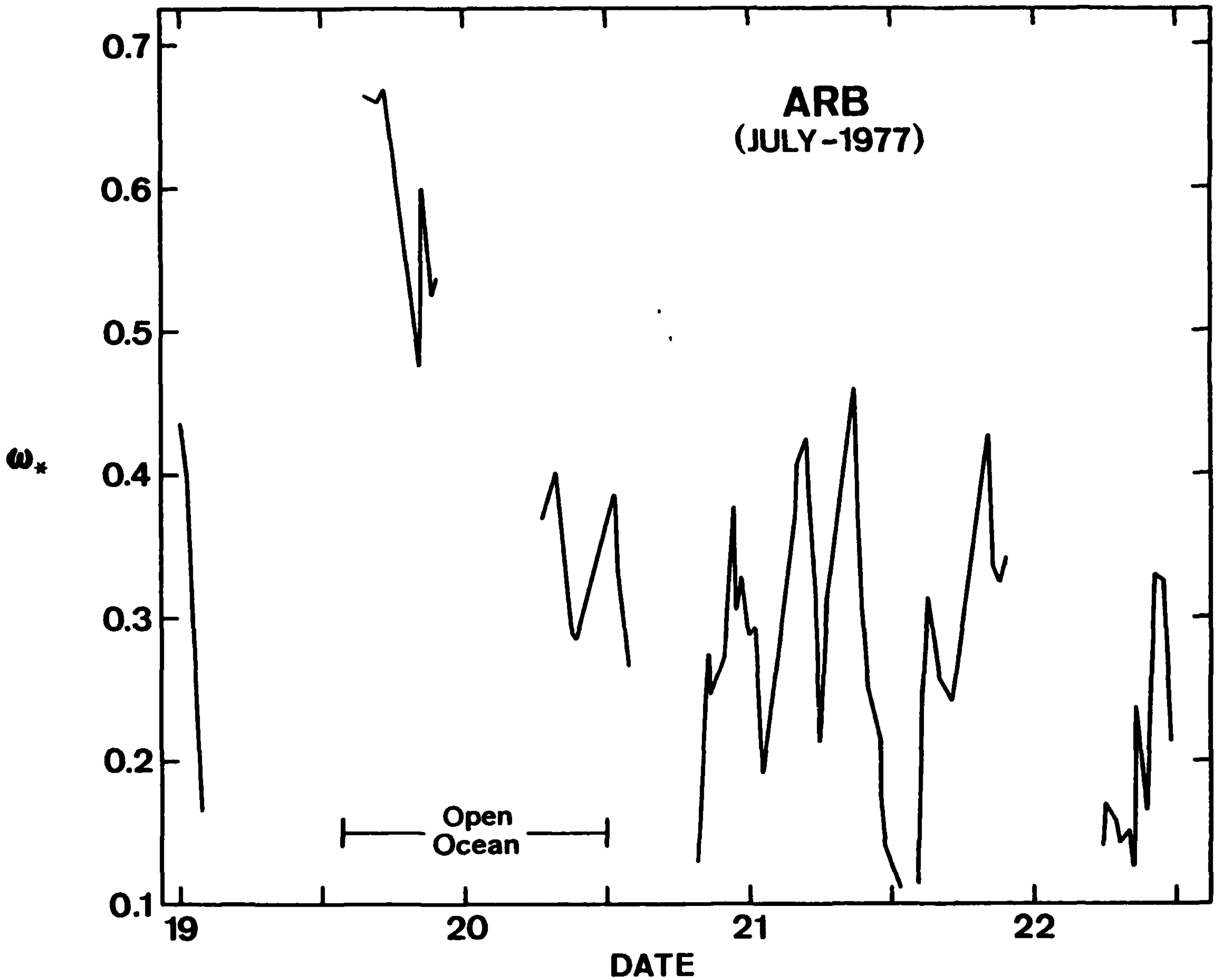

ARB
(JULY-1977)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
ω_*
19
20
21
22
DATE
Open
Ocean

Figure 6

area, spending most of the time near shore. The largest ω_* of approximately 0.6 m/sec was observed when the ship was away from the shore on 7/19 and was associated with large ΔT values. Near shore values averaged $\sim$0.3 m/sec. The very low values (< 0.2 m/sec) occured when ΔT was small, except on 7/22 when low winds resulted in low heat flux and ω_*. The very rapid decrease on the morning of the 19th was also associated with a decreasing wind speed in Santa Monica Bay.

CEWCOM-78 (Figure 7): This ship operated in the vicinity of San Nicolas Island, the channel islands and the Santa Barbara shoreline. Again, the lowest values for ω_* were obtained when the ship was near land. Low values, $\sim$0.15 m/sec, on 5/14 occured in near neutral conditions. Extremely high winds were encountered on 5/15 (up to 60 knts, when the anchor chain broke) and ω_* increased rapidly. Large values, $\sim$0.7 m/sec, from 5/19 to 5/22 were associated with large ΔT values. ΔT, and hence ω_*, decreased as the ship moved to the mainland on 5/22.

C_{tq} (Figure 7): All data was taken near shore in Monterey Bay. The largest $\omega_* \sim$ 0.75 m/sec occured for a large $\Delta T \sim$2.5°C and moderate winds. Lowest values and large fluctuations occured on 10/7 when conditions were near neutral.

MABLES-WC (Figure 8): The data shown is for the period when the ship was operating at stations A, B and C as described in the previous section. The data is averaged for the full time the ship

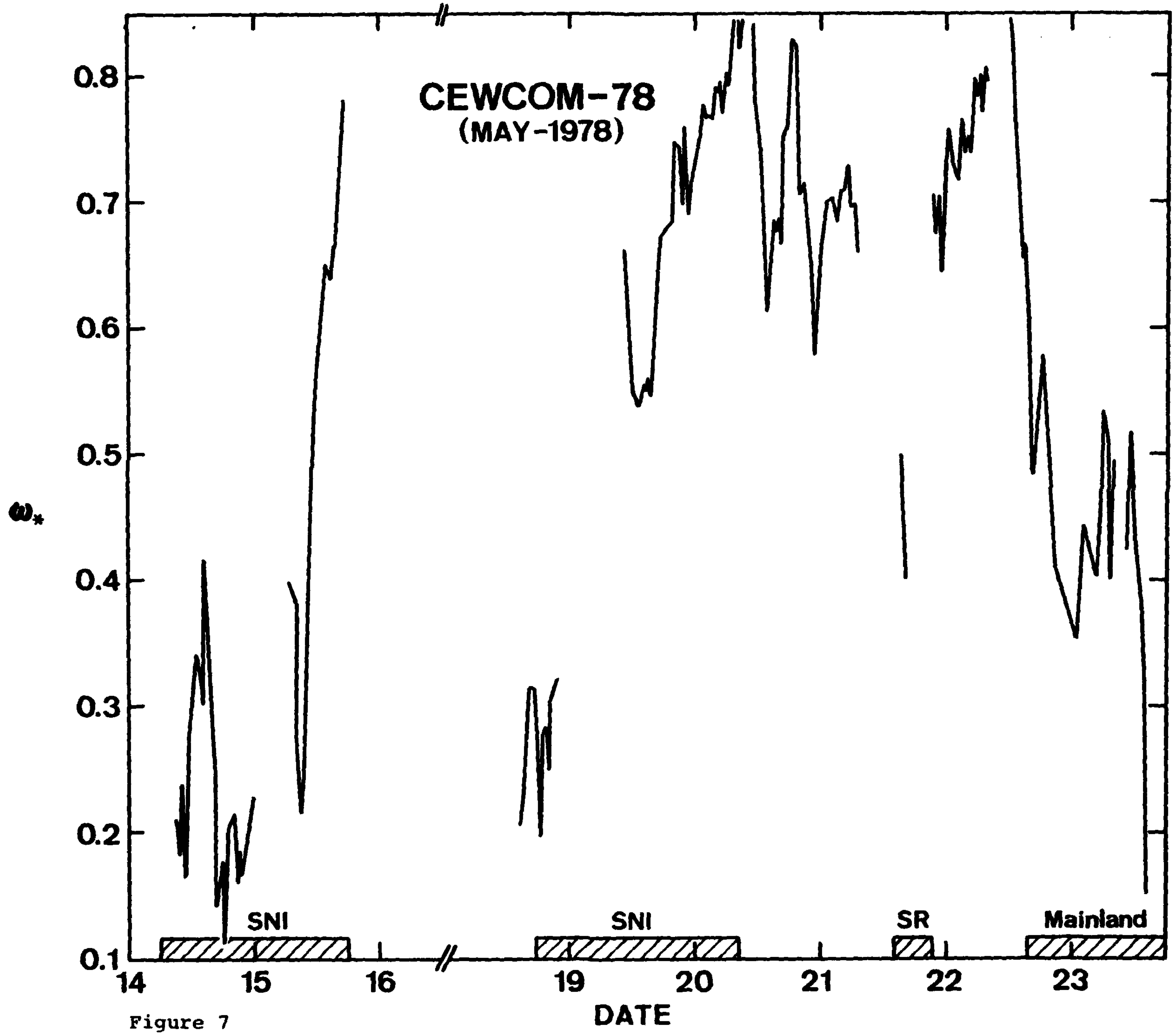

CEWCOM-78
(MAY-1978)
ω_*
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
14
15
16
19
20
21
22
23
DATE
SNI
SNI
SR
Mainland

Figure 7

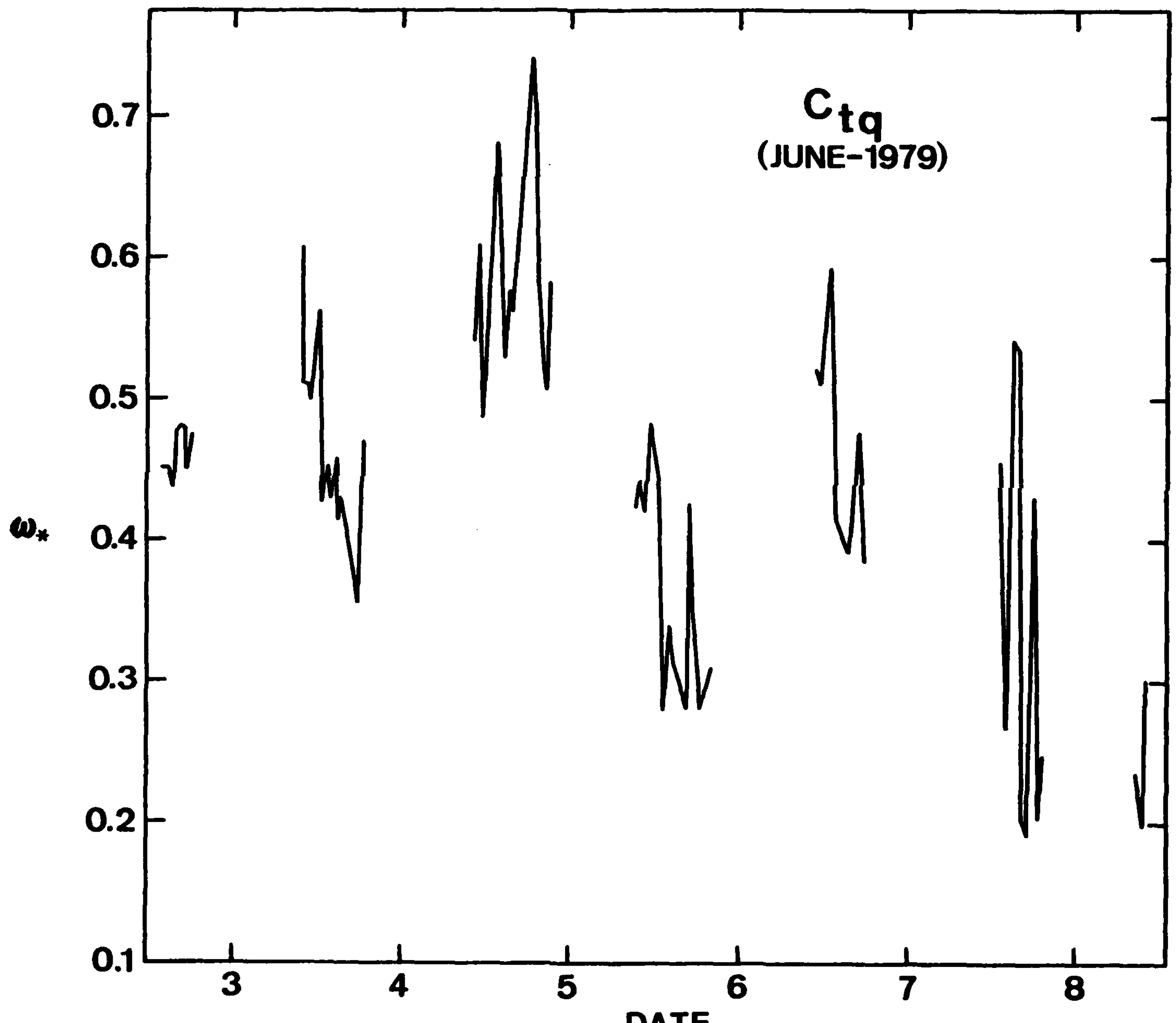


Figure 8

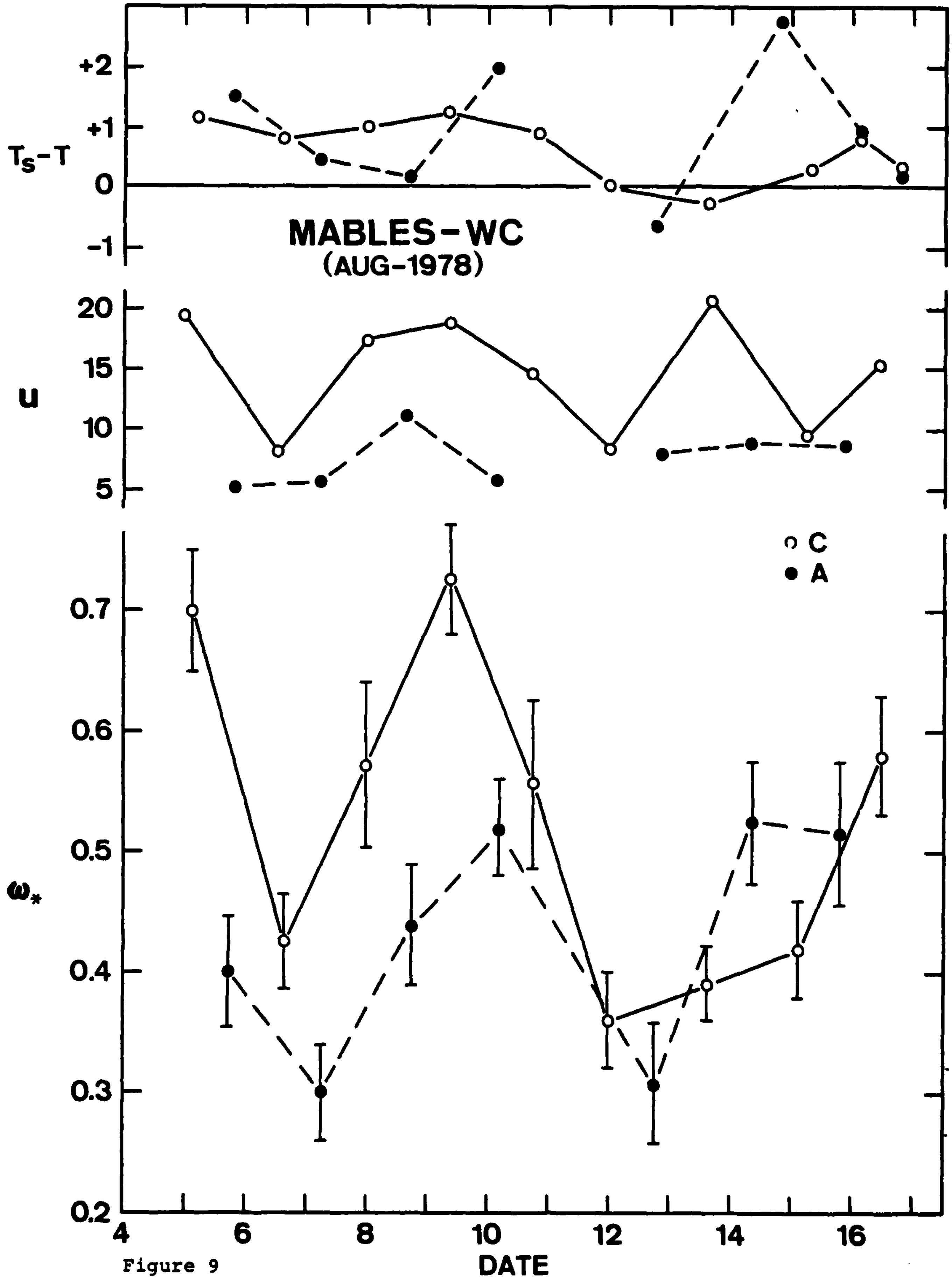
was at either station A or C, and both sets of results are plotted as functions of time. This allows an immediate comparison to be made between offshore (C) and near shore (A) locations. It is immediately apparent that offshore values of ω_* are generally higher than near shore values. This is due to generally higher offshore wind speeds. The only time when ω_* was higher near shore (on 8/14) was when there was a very high $\Delta T \sim 3°C$. Along the California coast offshore winds are generally higher than winds near the shore.

We now summarize these results in a form appropriate for easy use in air pollution models. Table II presents average values of ω_* appropriate for various conditions and locations. These values can be used in place of a value calculated from measured conditions. Accuracy can not be expected to be any greater than 50% and an average avlue could be a factor of two different than the actual value.

TABLE II

Average mixing rates for various locations and conditions

Conditions	Rate (m/sec)
Open Ocean	0.7
Within 10 N mi of coast	
24 hour average	0.4
Night	0.5
Afternoon	0.6
Land-Sea breeze changeover	0.3
Strong northwesterly, any location	0.7
Low wind and air-sea temperature difference	0.2



+2
+1
T_s-T
0
-1
MABLES-WC
(AUG-1978)
20
15
u
10
5
C
A
0.7
0.6
0.5
ω_*
0.4
0.3
0.2
4
6
8
10
12
14
16
DATE

Figure 9

It must be reemphasized that the above recommended values for the mixing rate must be used with care. There are several commonly encountered conditions that will cause the rate to be different than that given in the table. In particular the table does not take the air-sea temperature difference, nor the magnitude of the wind, into account. We have observed ω_* to be as large as 0.9 m/sec with a large temperature difference in moderate winds. During the winter there is often little diurnal variation in the wind and a value $\omega_* \sim 0.5$ m/sec for all times is reasonable.

Of course, the most accurate means of determining the mixing rate is to use Equation 24 with measured mean meteorological data. Full utilization of this method requires the use of the correct wind dependent drag coefficient and an iterative scheme to determine the stability. A simplified calculation scheme can be used that is fairly accurate. We now outline this method and the final equation that replaces Equation 24.

Approximate drag coefficients of $\mathfrak{C}_u = \mathfrak{C}_t = 1.3 \times 10^{-3}$ can be used with the bulk method. These values are substituted into Equation 7 to give approximate scaling parameters U_*, T_* q_*. The virtual heat flux can then be obtained directly from Equation 23 and used to calculate the mixing rate. The result is

$$\omega_* = 0.035 \left[z_i U_{10} \, [(T_{10} - T_S) + 0.18(q_{10} - q_S)] \right]^{1/3} \qquad (25)$$

where U_{10}, T_{10} and q_{10} refer to the values measured at 10 meters above sea level.

Measurements may be made at a height other than 10 meters. The drag coefficients can be easily adjusted to any reference height. Using Equation 5 we have

$$C_Z^{1/2} = C_{10}^{1/2}(\ln 10/Z_o)/(\ln Z/Z_o) \qquad (26)$$

where Z_o, the roughness length, is approximated by 6×10^{-4} m for wind and 2×10^{-5} m for temperature and water vapor. Note that corrections to Equation 25 must be applied for both the wind, and for temperature and humidity. The resulting correction for ω_* is

$$\omega_*(Z) = \omega_*(Z = 10)\ 5.03[(\ln Z + 7.42)(\ln Z + 10.82)]^{-1/3} \qquad (27)$$

If a determination of sea surface temperature and inversion height is available, then the mean air parameters can be determined on shore in a region where acceleration effects are small. These measured parameters can be used in Equation 25 to give the mixing rate with an expected error of no greater than 25%. The expected error is due to ignoring the dependence of the wind drag coefficient on wind speed and the slight dependence of all drag coefficients on hydrostatic stability in the unstable regime.

Appendix A

Meteorological data: The data are arranged in chronological order for each of the five cruises. Included are wind speed, relative humidity, air temperature, sea surface temperature, air-sea temperature difference, and the calculated virtual heat flux.

CP1264-76

Date/Time	U (m/sec)	RH (%)	P (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*wo (m/sec3)
10/04 1515	4	83	0.0	20.9	-0.73	100	5.7
10/04 1820	4	81	0.0	21.2	-1.44	140	11.3
10/04 1911	5	83	0.0	21.1	-0.88	110	6.5
10/04 2000	4	86	0.0	21.2	-1.62	140	12.6
10/04 2200	6	91	0.0	20.9	-1.13	92	11.2
10/04 2300	6	87	0.0	20.9	-0.94	110	10.2
10/05 0050	3	92	0.0	19.4	-0.56	180	3.0
10/05 0128	3	91	0.0	19.6	-0.29	180	1.8
10/05 0217	4	92	0.0	19.3	-0.51	200	3.5
10/05 0311	3	93	0.0	19.7	-0.63	200	2.9
10/05 0327	3	93	0.0	19.5	-0.55	212	2.3
10/05 0500	3	93	0.0	19.6	-0.20	160	1.1
10/05 0522	3	92	0.0	19.1	-0.66	210	3.4
10/05 0541	3	93	0.0	19.3	-0.92	205	3.9
10/05 0740	2	90	0.0			220	
10/05 0838	2	94	0.0	18.5	-1.26	218	3.6
10/05 0851	1	95	0.0	18.3	-1.21	230	3.0
10/05 0903	1	96	0.0	18.4	-1.16	200	2.4
10/05 0927	1	97	0.0	19.0	-1.68	80	2.7
10/05 1027	2	95	0.0	19.0	-1.45	90	5.7
10/05 1054	3	85	0.0	19.5	-0.69	130	3.6
10/05 1210	3	85	0.0	21.8	-2.28	165	14.7
10/05 1222	4	84	0.0	21.8	-2.24	130	15.1
10/05 1310	4	82	0.0	21.5	-0.74	200	7.7
10/05 1322	4	82	0.0	21.4	-1.60	220	14.0
10/05 1440	6	83	0.0	21.6	-1.76	210	20.7
10/05 1723	6	79	0.0	21.5	-0.36	110	12.0
10/05 1837	6	89	0.0	20.8	-1.00	240	10.5
10/05 2030	5	92	0.0	21.2	-2.44	230	21.6
10/05 2150	4	92	0.0	21.2	-2.27	240	14.6
10/05 2310	4	92	0.0	21.6	-2.13	260	14.2
10/06 0014	4	93	0.0	21.5	-2.30	220	16.0
10/06 0117	1	92	0.0	21.4	-1.59	330	11.7
10/06 0149	3	91	0.0	21.5	-2.03	350	12.7
10/06 0240	3	90	0.0	21.5	-1.80	350	11.6

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Date/Time	U (m/sec)	RH (%)	P (C)	Ts (C)	T-Ts (C)	Zi (m)	10*3*Wo (m/secs)
10/06 0441	3	90	0.0	21.4	-2.26	270	13.5
10/06 0540	3	90	0.0	21.5	-2.49	340	14.9
10/06 0640	3	90	0.0	21.4	-2.45	350	12.7
10/06 0910	3	88	0.0	21.3	-2.42	220	14.0
10/06 1150	4	83	0.0	19.5	-0.63	300	6.6
10/06 1330	6	84	0.0	19.7	-1.00	260	11.2
10/06 1432	6	84	0.0	19.1	-0.79	220	10.5
10/06 1610	7	84	0.0	19.0	-0.36	300	12.8
10/06 1734	7	81	0.0			290	
10/06 2010	6	92	0.0	18.9	-0.67	260	6.3
10/06 2130	5	89	0.0	18.9	-0.52	250	5.7
10/06 2230	6	89	0.0	18.7	-0.65	250	9.8
10/06 2330	7	89	0.0	18.4	-0.82	240	9.7
10/07 0030	6	90	0.0	18.2	-0.93	240	9.7
10/07 0221	6	91	0.0	18.1	-1.53	300	15.5
10/07 0310	6	91	0.0	18.0	-0.59	300	10.5
10/07 0340	6	92	0.0	18.0	-1.03	220	11.0
10/07 0450	7	93	0.0	17.9	-1.36	230	11.9
10/07 0530	7	94	0.0	17.5	-1.33	300	15.9
10/07 0633	6	93	0.0	17.6	-1.26	320	16.3
10/07 0810	7	93	0.0	18.1	-1.45	260	17.4
10/07 0910	6	88	0.0	19.8	-1.95	320	20.2
10/07 1210	4	85	0.0	21.8	-3.36	170	25.2
10/07 1410	6	83	0.0	21.3	-2.42	100	27.6
10/07 1610	4	84	0.0	20.1	-0.59	130	5.4
10/07 1910	4	84	0.0	20.6	-2.01		
10/07 2000	5	87	0.0	20.3	-1.71		
10/07 2110	5	84	0.0	20.4			
10/07 2240	5	82	0.0	20.4			
10/08 0010	4	92	0.0	20.0	-0.92	100	6.2
10/08 0110	4	91	0.0	20.4	-1.45	100	9.3
10/08 0411	3	93	0.0	20.4	-1.63	60	7.5
10/08 0520	4	91	0.0	20.4	-1.53	140	11.3
10/08 0621	2	92	0.0	19.4	-0.53	166	2.3
10/08 0713	3	92	0.0	19.9	-1.01	160	4.4

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10⁴ B* [illegible] (m²/sec³)
10/08 0854	3	71	0.0	19.7			
10/08 1241	4	95	0.0	17.4	-1.37	100	11.7
10/08 1253	4	95	0.0	17.9	-2.37	100	14.5
10/08 1305	4	95	0.0	17.9	-1.74	160	9.9
10/08 1317	3	95	0.0	17.6	-0.72	120	3.3
10/08 1424	3	89	0.0	17.9	-1.32	140	5.4
10/08 1440	3	83	0.0	15.7	1.16	130	-2.4
10/08 1452	3	88	0.0	16.0	0.35	200	-2.0
10/08 1504	3	87	0.0	16.0	0.38	130	-2.0
10/08 1516	3	63	0.0	15.7	1.55	140	-2.5
10/08 1642	3	46	0.0			300	
10/08 1551	3	96	0.0			320	
10/08 2011	4	93	0.0	17.5	-0.70	140	4.8
10/08 2017	4	93	0.0	17.2	-0.40	200	2.7
10/08 2210	5	91	0.0	19.0	-1.79	210	15.3
10/08 2310	6	90	0.0	13.9	-1.43	140	13.7
10/09 0210	6	88	0.0	18.2	-0.74	100	8.4
10/08 0321	7	89	0.0	18.2	-0.90	100	10.5
10/09 0412	7	89	0.0	18.5	-1.80	80	20.4
10/09 0610	8	90	0.0	18.2	-2.00	120	25.8
10/09 0712	9	90	0.0	17.9	-1.73	160	25.3
10/09 0759	8	91	0.0	17.6	-1.36	180	19.5
10/09 0811	8	93	0.0	17.6	-2.67	130	36.8
10/09 0835	8	94	0.0	17.6	-2.60	220	35.6
10/09 0859	8	95	0.0	17.6	-2.98	220	40.2
10/09 0925	8	96	0.0	17.6	-2.92	260	36.5
10/09 0951	8	96	0.0	17.6	-3.13	260	42.3
10/09 1212	7	94	0.0	17.7	-3.00	260	35.9
10/09 1220	7	94	0.0	17.7	-3.06	240	35.9
10/09 1332	7	91	0.0	17.6	-2.95	250	33.6
10/09 1341	7	91	0.0	17.3	-2.55	260	30.0
10/10 0700	4	95	0.0	14.1	-0.76	360	4.6
10/10 0732	4	99	0.0	13.9	-0.57	330	3.2
10/10 0826	1	93	0.0	13.8	-0.71	330	1.3
10/10 0920	3	97	0.0	14.5	-0.75	340	3.1

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date/time	U (m/sec)	RH (%)	r (C)	TS (C)	T-TS (C)	zi (m)	10**3*[illegible] (m/sec3)
10/10 1129	6	93	0.0	14.3	-0.76	340	6.1
10/10 1310	6	91	0.0	15.5	-0.79	300	7.9
10/10 1603	6	90	0.0	16.1	-0.76	180	11.0
10/10 1645	5	92	0.0	15.9	-0.76	150	6.0
10/10 2250	5	92	0.0	18.7	-0.74	30	5.1
10/11 0500	2	90	0.0	17.5	-0.74	340	2.2
10/11 0530	2	89	0.0	17.7	-0.74	360	2.4
10/11 0857	1	85	0.0	17.9	-0.94	400	2.7
10/11 0922	1	85	0.0	18.2	-0.75	340	2.0
10/11 1046	3	86	0.0	18.1	-0.74	260	4.9
10/11 1223	3	80	0.0	19.1	-0.74	220	5.2
10/11 1325	4	80	0.0	18.6	-0.75	160	7.4
10/11 1422	4	73	0.0	19.4	-0.74	200	6.4
10/11 1744	3	61	0.0	19.7	-0.74	300	5.5
10/12 0755	2	31	0.0	18.9	-0.66	420	3.5

ARB

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*we (m/sec)
07/19 0000	2	90	16.4	19.1	-2.75	230	6.7
07/19 0020	1	92	16.0	18.5	-2.53	330	5.6
07/19 0100	1	92	16.0	17.6	-1.61	320	2.4
07/19 0140	0	93	15.9	16.7	-0.80	190	0.7
07/19 1620	3	79	18.7	21.1	-2.33	470	14.9
07/19 1650	4	79	18.5	21.1	-2.57	500	19.4
07/19 1710	4	79	18.3	21.0	-2.72	490	16.6
07/19 1730	4	79	18.1	20.9	-2.77	480	19.4
07/19 2000	4	84	18.2	18.8	-0.59	500	5.3
07/19 2040	3	87	17.5	19.8	-2.26	540	11.3
07/19 2120	2	87	17.5	19.8	-2.26	590	7.3
07/19 2140	2	87	17.6	19.9	-2.33	600	7.5
07/19 2200	1	87	17.6	19.8	-2.20	600	3.3
07/20 0700	1	85	17.0	18.7	-1.67	150	9.4
07/20 0740	3	86	17.3	19.2	-1.93	230	8.5
07/20 0900	2	85	17.8	19.3	-1.46	160	4.6
07/20 0920	2	85	17.9	19.3	-1.42	180	4.4
07/20 1240	2	78	19.0	20.2	-1.20	360	5.2
07/20 1300	2	79	19.0	19.8	-0.75	350	3.2
07/20 1320	2	83	19.0	19.7	-0.63	280	2.3
07/20 1800	7	84	18.8	18.2	0.56	80	-3.9
07/20 1900	6	83	18.3	17.8	0.48	140	-4.3
07/20 1920	7	84	18.4	17.7	0.65	160	-6.4
07/20 1940	7	84	18.3	18.4	-0.12	250	2.5
07/20 2000	5	85	18.2	18.3	-0.05	280	2.1
07/20 2020	5	86	17.7	18.3	-0.56	240	3.7
07/20 2040	4	87	17.9	18.3	-0.45	200	2.5
07/20 2120	4	88	17.8	18.2	-0.41	240	2.3
07/20 2140	4	89	17.7	18.2	-0.53	240	2.3
07/20 2220	2	90	17.6	19.0	-1.38	340	4.8
07/20 2230	2	91	17.5	18.4	-0.83	340	2.7
07/20 2300	2	91	17.2	18.2	-1.00	300	2.9
07/20 0000	3	94	16.6	17.2	-0.63	280	2.5
07/21 0040	3	94	15.2	16.0	-0.79	310	2.5
07/21 0100	2	93	15.9	16.6	-0.72	200	2.0

ARB

Date/Time	U (m/sec)	RH (%)	T (C)	TS (C)	T-TS (C)	Zi (m)	10*3*Qo (C/sec)
07/21 0405	3	98	16.2	17.7	-1.46	240	6.3
07/21 0425	3	97	16.4	18.1	-1.65	320	6.2
07/21 0445	3	96	16.8	18.4	-1.57	330	6.0
07/21 0505	2	94	17.1	18.4	-1.33	360	4.5
07/21 0545	2	91	17.4	18.2	-0.81	455	2.2
07/21 0605	0	89	17.4	18.3	-0.84	460	0.7
07/21 0645	1	89	17.3	18.3	-0.96	480	2.0
07/21 0705	2	89	17.3	18.2	-0.86	460	2.4
07/21 0845	3	91	17.7	19.0	-1.31	475	6.4
07/21 0905	2	89	17.8	18.9	-1.14	430	3.9
07/21 0945	1	89	17.5	18.8	-1.25	360	2.6
07/21 1005	2	88	17.4	18.2	-0.72	310	2.1
07/21 1025	0	88	17.6	18.5	-0.88	300	0.8
07/21 1045	1	88	17.6	18.4	-0.80	280	1.6
07/21 1105	4	85	17.4	17.7	-0.33	260	2.1
07/21 1305	7	90	17.7	17.7	-0.05	180	2.2
07/21 1325	7	90	17.5	17.7	-0.24	210	3.0
07/21 1345	7	90	17.5	17.9	-0.40	200	3.0
07/21 1405	7	90	17.7	18.2	-0.54	200	4.6
07/21 1505	7	88	18.2	18.9	-0.63	200	7.9
07/21 1620	7	86	18.3	18.8	-0.47	200	6.6
07/21 1720	6	85	18.0	18.7	-0.69	120	5.4
07/21 1945	4	79	18.6	19.9	-1.30	250	10.4
07/21 2030	3	85	18.2	19.8	-1.66	150	7.5
07/21 2110	1	84	18.3	19.7	-1.35	300	3.4
07/21 2130	2	85	18.3	19.5	-1.21	310	3.8
07/22 0550	2	93	17.1	17.3	-0.19	205	0.5
07/22 0610	2	94	16.9	17.2	-0.34	220	0.7
07/22 0710	0	96	16.5	17.3	-0.77	240	0.5
07/22 0730	0	97	16.6	17.3	-0.68	240	0.4
07/22 0750	0	97	16.5	17.3	-0.76	240	0.5
07/22 0810	0	97	16.7	17.3	-0.57	245	0.3
07/22 0830	2	96	16.6	17.3	-0.72	230	2.1
07/22 0910	1	97	16.5	17.3	-0.73	210	1.4
07/22 0930	1	97	16.6	17.3	-0.71	220	0.8

ARB

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*w0 (m/sec C)
07/22 1030	2	96	17.1	18.5	-1.46	260	4.0
07/22 1050	1	94	17.5	18.6	-1.09	250	1.4
07/23 1440	3	87	19.2	18.2	0.02	230	-1.4
07/23 1505	4	85	19.5	18.7	0.76	310	-2.9
07/23 1645	5	83	19.9	20.4	-0.43	320	5.1
07/23 1725	5	85	19.1	19.2	-0.03	355	1.9
07/23 1745	2	87	18.8	19.1	-0.28	350	1.2
07/23 2340	2	90	18.5	18.0	0.53	500	-0.5
07/24 0040	2	91	19.1	18.6	0.50	155	-0.7
07/24 0100	2	90	19.0	18.6	0.39	120	-0.5
07/24 0120	2	90	19.0	18.7	0.28	170	-0.3
07/24 0240	2	87	19.0	18.7	0.25	120	-0.2
07/24 0300	2	86	19.0	18.7	0.23	130	-0.3
07/24 0420	1	88	18.8	18.7	0.06	140	0.0
07/24 1000	1	78	19.3	19.2	0.05	165	0.5
07/25 2220	5	63	19.3	17.7	1.57	160	-3.8
07/25 2320	5	84	19.1	17.9	1.27	160	-7.1
07/26 0420	1	90	18.6	18.1	0.49	90	-0.2

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*go (m/sec3)
05/14 0830	3	100	13.7	14.4	-1.26	80	-10.0
05/14 0853	3	100	14.4	14.4	-0.51	100	-3.1
05/14 0913	3	100	14.3	14.3	-0.49	120	-2.3
05/14 0933	2	100	14.7	14.7	-0.47	140	-1.8
05/14 0953	3	98	14.8	14.6	-0.32	105	-1.7
05/14 1013	3	96	14.5	14.6	-0.57	95	-4.1
05/14 1051	2	95	15.0	14.8	-0.32	90	-1.4
05/14 1121	2	93	14.5	15.3	-1.27	90	-5.6
05/14 1151	3	94	14.3	15.2	-1.42	85	-7.4
05/14 1224	2	94	14.5	15.1	-1.06	180	-4.9
05/14 1300	2	91	14.8	15.2	-0.89	280	-4.1
05/14 1330	2	91	14.9	15.2	-0.78	300	-3.7
05/14 1400	2	91	15.0	15.0	-0.58	310	-2.6
05/14 1430	5	90	14.7	15.0	-0.82	310	-6.8
05/14 1500	4	92	14.7	14.8	-0.56	310	-3.9
05/14 1530	2	91	15.3	15.1	-0.32	310	-1.9
05/14 1600	2	87	16.0	15.3	0.24	320	-0.3
05/14 1636	3	86	16.4	15.0	0.44	300	1.5
05/14 1730	3	88	16.4	14.9	0.99	220	0.6
05/14 1800	2	89	16.5	14.9	1.15	200	0.8
05/14 1830	3	87	16.0	14.7	0.74	100	0.4
05/14 1930	5	89	15.0	14.5	-0.05	160	-1.6
05/14 2000	4	90	14.9	14.6	-0.15	140	-2.1
05/14 2050	5	89	14.9	14.3	0.05	125	-1.0
05/14 2120	4	88	14.9	14.4	0.02	135	-1.4
05/14 2150	7	89	14.7	14.1	0.06	140	-1.0
05/14 2240	8	89	14.9	14.2	0.19	180	-0.1
05/14 2310	8	87	14.9	14.1	0.24	175	-0.1
05/15 0002	7	88	14.7	14.1	0.00	260	-1.3
05/15 0651	11	79	15.2	14.6	0.09	300	-6.2
05/15 0721	11	79	15.2	14.6	0.13	300	-5.5
05/15 0751	9	78	15.4	14.6	0.32	300	-2.0
05/15 0835	10	84	15.3	14.7	0.16	300	1.0
05/15 0909	11	84	15.3	14.6	0.21	300	1.5
05/15 0939	12	83	14.5	14.6	-0.53	300	-15.8

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10*3*QO (m/secK)
05/15 1116	11	82	14.9	14.6	-0.23	300	-5.2
05/15 1146	12	81	14.9	15.0	-0.61	300	-15.5
05/15 1216	12	80	14.9	15.2	-0.74	300	-18.1
05/15 1246	12	83	15.0	15.4	-0.91	300	-20.6
05/15 1341	14	83	15.0	15.5	-1.09	300	-27.1
05/15 1410	13	73	15.1	15.7	-1.03	300	-25.9
05/15 1520	14	71	15.3	15.8	-0.99	300	-28.3
05/15 1550	14	68	15.5	15.7	-0.72	335	-25.7
05/15 1620	15	68	15.4	15.7	-0.72	350	-28.4
05/15 1700	15	55	15.2	15.7	-0.92	360	-32.4
05/15 1730	16	55	15.2	15.7	-0.96	330	-36.3
05/15 1855	16	53	14.9	15.7	-1.29	400	-49.3
05/15 1925	18	66	14.5	14.9	-0.94	340	-41.0
05/18 1331	2	59	20.3	20.3	-0.53	50	-9.4
05/18 1401	3	60	20.1	20.6	-1.00	50	-11.9
05/18 1459	3	69	19.7	19.7	-0.50	50	-5.1
05/18 1600	4	68	18.4	18.6	-0.70	60	-5.0
05/18 1700	6	78	17.0	17.6	-1.04	60	-14.9
05/18 1730	7	79	16.7	17.2	-1.03	60	-14.9
05/18 1800	7	81	16.3	16.9	-1.11	50	-13.6
05/18 1820	6	83	16.1	15.9	-0.27	50	-4.3
05/18 1900	5	82	16.0	16.3	-0.78	30	-7.6
05/18 1948	4	89	15.4	16.0	-1.04	95	-6.9
05/18 2018	3	91	15.0	15.9	-1.39	115	-6.9
05/18 2049	3	94	14.9	15.3	-0.95	105	-4.4
05/18 2218	13	94	14.9	15.3	-0.95	50	-19.0
05/19 1057	8	98	12.4	15.1	-3.16	200	-42.4
05/19 1200	5	94	12.7	15.2	-2.99	210	-25.3
05/19 1230	5	91	12.9	15.3	-2.89	190	-25.5
05/19 1300	6	93	13.0	15.3	-2.35	170	-26.3
05/19 1330	5	93	13.1	15.4	-2.34	135	-26.0
05/19 1400	6	92	13.2	15.5	-2.34	190	-25.3
05/19 1430	6	92	13.3	15.5	-2.68	200	-24.5
05/19 1500	6	92	13.3	15.5	-2.75	200	-25.6
05/19 1530	6	92	13.2	15.5	-2.31	180	-26.4

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*[illegible] (m/secK)
05/19 1630	7	94	13.0	15.5	-3.01	210	-32.1
05/19 1700	8	93	12.9	15.4	-3.05	220	-35.9
05/19 1730	8	93	12.8	15.4	-3.06	240	-37.1
05/19 1800	7	94	12.7	15.4	-3.29	250	-36.4
05/19 1830	7	95	12.5	15.5	-3.40	230	-39.3
05/19 1930	6	96	12.2	15.3	-3.66	220	-42.6
05/19 2000	8	97	12.0	15.3	-3.76	260	-47.1
05/19 2030	6	97	12.0	15.4	-3.92	250	-50.9
05/19 2100	7	98	12.1	15.3	-3.72	280	-43.0
05/19 2130	7	98	12.1	15.4	-3.77	230	-43.2
05/19 2200	8	98	11.9	15.3	-3.68	230	-45.6
05/19 2230	7	98	12.0	15.3	-3.76	220	-44.0
05/19 2300	7	98	12.0	15.3	-3.80	240	-43.5
05/19 2330	7	98	11.8	15.3	-3.98	240	-44.6
05/20 0130	6	98	11.8	15.2	-3.94	330	-38.1
05/20 0200	7	98	11.5	15.2	-4.22	310	-44.5
05/20 0230	6	98	11.7	15.2	-3.99	360	-36.9
05/20 0300	6	98	11.6	15.1	-3.94	340	-33.8
05/20 0330	6	98	11.6	15.1	-3.95	370	-39.3
05/20 0400	7	98	11.8	15.1	-3.80	360	-39.3
05/20 0430	7	97	11.7	15.0	-3.82	350	-42.0
05/20 0500	6	97	11.3	15.0	-3.67	360	-37.5
05/20 0530	6	96	11.7	14.9	-3.63	370	-36.3
05/20 0600	7	95	11.3	14.7	-3.32	420	-36.2
05/20 0630	7	96	11.8	14.6	-3.29	420	-34.5
05/20 0700	7	95	11.9	14.7	-3.29	420	-37.7
05/20 0730	8	96	11.9	14.7	-3.33	450	-40.2
05/20 0800	8	96	12.0	14.7	-3.20	420	-38.4
05/20 0930	8	93	12.2	15.5	-3.75	430	-47.9
05/20 1000	9	92	12.4	15.5	-3.55	450	-50.0
05/20 1100	9	90	12.6	15.3	-3.13	440	-44.6
05/20 1130	8	89	12.6	14.7	-2.55	420	-32.8
05/20 1200	8	89	12.7	14.6	-2.39	420	-31.9
05/20 1230	8	87	12.9	14.5	-2.10	440	-27.3
05/20 1300	9	86	12.9	14.1	-1.53	430	-21.2

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*wθ (m/secK)
05/20 1400	8	83	13.3	14.2	-1.41	400	-20.1
05/20 1455	9	82	13.3	14.3	-1.52	450	-21.0
05/20 1530	9	81	13.4	14.4	-1.53	420	-21.7
05/20 1600	9	81	13.4	14.4	-1.51	450	-21.0
05/20 1630	9	82	13.3	14.4	-1.53	420	-20.8
05/20 1700	9	83	13.2	14.4	-1.78	450	-27.3
05/20 1730	10	83	13.1	14.5	-1.90	430	-30.0
05/20 1800	10	85	13.0	14.5	-1.98	440	-32.1
05/20 1830	11	84	12.8	14.6	-2.27	420	-39.8
05/20 1900	11	85	12.6	14.5	-2.10	420	-39.2
05/20 1954	10	88	12.8	14.1	-1.34	360	-23.7
05/20 2030	11	87	12.7	13.8	-1.64	360	-29.5
05/20 2100	11	88	12.7	13.7	-1.50	360	-26.2
05/20 2130	11	88	12.5	13.4	-1.28	380	-22.8
05/20 2200	10	88	12.5	13.2	-1.16	400	-19.9
05/20 2230	10	88	12.6	13.0	-0.91	380	-15.1
05/20 2300	10	87	12.5	13.0	-1.02	410	-16.3
05/20 2330	10	88	12.4	13.1	-1.15	380	-19.1
05/21 0000	10	83	12.3	13.0	-1.17	420	-20.3
05/21 0130	10	83	12.4	13.1	-1.25	500	-20.0
05/21 0200	9	83	12.3	13.0	-1.25	520	-19.7
05/21 0300	9	87	12.3	13.1	-1.23	530	-17.6
05/21 0330	9	85	12.3	13.0	-1.22	580	-18.0
05/21 0356	9	84	12.3	13.0	-1.17	590	-17.7
05/21 0430	9	83	12.3	13.0	-1.13	600	-18.5
05/21 0458	9	82	12.4	13.0	-1.09	600	-18.9
05/21 0530	8	82	12.5	13.1	-1.07	620	-15.9
05/21 0553	9	80	12.6	13.0	-0.93	660	-15.0
05/21 0630	8	80	12.7	13.1	-0.85	700	-13.8
05/21 0655	7	79	12.8	13.1	-0.34	710	-11.9
05/21 1025	7	80	12.9	13.5	-1.03	0	-14.7
05/21 1100	7	80	12.9	13.3	-0.87	0	-12.5
05/21 1130	7	79	13.1	13.4	-0.71	0	-8.9
05/21 1200	5	77	13.5	13.5	-0.48	0	-6.2
05/21 1445	6	75	14.0	15.4	-1.92	400	-31.7

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Date/Time	U (m/sec)	RH (%)	T (C)	TS (C)	T-TS (C)	Zi (m)	10*3*Qo (m/sec K)
05/21 1500	6	74	14.0	14.3	-0.84	320	-11.5
05/21 1630	8	73	14.0	14.3	-0.76	140	-13.5
05/21 2100	11	78	13.9	15.6	-2.19	430	-42.6
05/21 2130	9	78	13.3	14.6	-1.31	460	-22.4
05/21 2200	8	80	13.5	14.3	-1.22	520	-17.5
05/21 2230	10	80	13.5	13.8	-0.85	600	-17.1
05/21 2300	10	79	13.5	13.5	-0.57	600	-13.0
05/21 2330	11	76	13.3	13.5	-0.63	640	-15.1
05/22 0000	11	77	13.2	13.6	-0.38	600	-19.0
05/22 0030	10	75	13.1	13.7	-1.02	530	-21.2
05/22 0100	10	78	13.1	13.7	-1.12	570	-22.1
05/22 0130	10	79	12.9	13.5	-1.15	560	-20.4
05/22 0230	10	76	12.7	13.2	-0.98	540	-20.2
05/22 0300	11	76	12.6	13.2	-1.09	530	-22.6
05/22 0330	11	75	12.6	13.0	-0.92	590	-20.1
05/22 0400	11	76	12.6	13.0	-0.83	650	-19.1
05/22 0430	10	77	12.6	13.0	-0.86	700	-17.0
05/22 0500	10	78	12.6	13.2	-1.07	700	-19.0
05/22 0530	10	78	12.6	13.2	-1.14	700	-21.1
05/22 0600	10	78	12.6	13.3	-1.19	720	-19.7
05/22 0630	11	74	12.7	13.4	-1.17	780	-25.7
05/22 0700	10	74	12.7	13.2	-1.05	800	-19.0
05/22 0730	9	74	12.7	13.1	-0.90	850	-15.8
05/22 0800	10	75	12.3	13.2	-0.91	860	-17.9
05/22 0830	10	73	12.7	13.1	-0.37	860	-17.5
05/22 1130	9	78	12.7	13.6	-1.40	920	-21.9
05/22 1300	11	77	12.9	13.5	-1.09	680	-24.4
05/22 1330	11	75	12.9	13.2	-0.85	600	-21.8
05/22 1400	10	74	12.6	12.9	-0.72	550	-16.3
05/22 1430	9	75	12.6	12.9	-0.85	500	-16.4
05/22 1500	11	75	12.6	13.4	-1.26	350	-24.8
05/22 1600	13	74	12.7	13.2	-1.02	250	-26.6
05/22 1630	12	71	13.1	12.8	-0.25	275	-12.2
05/22 1850	12	60	14.1	14.1	-0.54	300	-13.8
05/22 2055	7	55	14.7	14.8	-1.57	160	-12.7

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*QC (m/secK)
05/23 0103	6	64	12.8	14.7	-2.31	50	-26.0
05/23 0230	4	64	12.4	14.5	-2.65	140	-13.1
05/23 0300	6	66	12.3	14.5	-2.68	80	-29.8
05/23 0330	8	67	11.9	14.5	-3.19	50	-44.5
05/23 0500	2	66	12.2	14.4	-2.39	180	-10.9
05/23 0524	3	64	12.0	14.4	-2.85	180	-15.3
05/23 0548	3	65	11.3	14.4	-3.57	225	-20.1
05/23 0545	3	56	11.3	14.3	-2.96	200	-19.9
05/23 0700	1	57	12.1	14.4	-2.83	200	-9.8
05/23 0725	2	53	11.9	14.3	-2.98	230	-12.6
05/23 0810	11	51	11.9	14.3	-2.93	255	-55.9
05/23 1043	14	54	13.8	15.0	-1.73	50	-45.6
05/23 1130	11	54	14.3	14.9	-1.06	140	-23.9
05/23 1200	14	54	14.5	14.0	-0.04	160	-15.1
05/23 1230	12	60	14.4	14.8	-0.91	60	-28.5
05/23 1300	11	62	14.5	14.7	-0.65	70	-21.4
05/23 1330	12	59	15.1	14.6	-0.02	80	-14.0
05/23 1400	12	60	15.0	14.4	0.07	50	-9.3
05/23 1430	11	60	15.2	13.9	0.77	50	2.0
05/23 1500	12	56	16.1	13.8	1.72	50	14.3
05/23 1540	11	50	16.5	13.7	2.26	50	21.1
05/23 1600	11	50	16.4	13.5	2.33	50	22.0
05/23 1620	13	49	16.4	13.3	2.59	50	29.7
05/23 1640	15	48	16.2	13.2	2.49	50	31.6
05/23 1700	15	51	16.1	13.0	2.58	50	26.6
05/23 1720	15	45	16.1	13.1	2.51	50	30.4
05/23 1800	16	48	15.3	12.8	1.99	220	25.9
05/23 1830	17	53	14.6	12.7	1.40	200	13.7
05/23 1900	13	49	14.5	12.7	1.29	180	8.8
05/23 1930	11	50	13.9	12.7	0.67	155	-1.2
05/23 2000	13	53	13.2	12.7	-0.05	125	-15.7
05/23 2030	12	59	12.2	12.1	-0.33	100	-17.9
05/24 0206	4	50	12.5	12.4	-0.39	0	-6.6
05/24 0250	5	52	13.9	11.7	1.65	0	2.8
05/24 0324	3	53	13.5	11.5	1.63	0	0.9

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Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*Qo (m/secK)
05/24 0404	5	40	13.7	12.4	0.75	0	-2.4
05/24 0424	3	39	13.0	11.5	0.97	0	-0.3
05/24 0500	15	50	11.0	11.2	-0.67	0	-27.4
05/24 1000	13	73	10.7	10.9	-0.73	0	-17.4
05/24 1030	12	76	10.8	10.8	-0.52	0	-12.1
05/24 1100	12	76	11.0	10.7	-0.18	0	-7.5
05/24 1130	12	75	11.0	10.8	-0.28	0	-12.4
05/24 1200	12	77	11.2	10.8	-0.12	0	-9.7
05/24 1230	11	80	11.2	10.7	-0.02	0	-9.3
05/24 1330	11	73	11.6	11.0	0.16	0	-4.3
05/24 1400	11	76	11.9	11.1	0.30	0	-2.6
05/24 1430	11	75	12.0	11.1	0.46	0	0.5
05/24 1500	12	76	12.1	11.0	0.58	0	2.5
05/24 1530	12	75	12.2	11.0	0.75	0	4.8
05/24 1600	12	73	12.3	10.7	1.17	0	12.3
05/24 1630	13	73	12.4	10.7	1.25	0	15.3
05/24 1700	12	74	12.6	10.3	1.29	0	14.7
05/24 1730	13	72	12.7	11.0	1.16	0	13.6
05/25 1400	3	81	11.3	11.0	-0.24	0	-3.7
05/25 1429	3	82	11.3	11.0	-0.19	0	-3.1
05/25 1454	3	81	11.4	11.0	-0.06	0	-2.0
05/25 1600	3	81	11.6	10.5	0.63	0	0.8
05/25 1630	3	77	12.4	10.3	1.60	0	2.9
05/25 1720	4	78	12.5	11.0	0.95	0	1.8
05/25 1745	4	80	12.6	11.3	0.80	0	1.8

[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Wi (d)	10**3*Qo (g/sec)
07/31 1135	2	100	10.8	12.7	-1.92	290	7.0
07/31 1205	3	100	10.3	14.3	-3.50	240	10.5
07/31 1223	7	97	10.5	12.1	-1.67	140	27.5
07/31 1323	8	97	10.7	11.0	-0.37	120	13.3
07/31 1353	8	97	10.9	11.6	-0.69	200	23.3
07/31 1423	8	97	10.9	11.3	-0.35	230	18.0
07/31 1527	7	93	11.1	11.9	-0.85	240	22.3
07/31 1557	7	97	11.1	12.8	-1.73	240	29.0
07/31 1627	6	96	11.0	13.0	-1.94	220	27.5
07/31 1657	6	97	10.8	12.5	-1.65	240	23.2
07/31 1727	5	98	10.8	13.2	-2.47	220	26.0
07/31 1757	3	99	10.5	13.1	-2.62	220	20.3
07/31 1827	3	99	10.4	13.1	-2.65	200	17.5
07/31 1902	3	96	11.2	14.3	-3.11	180	21.0
07/31 1934	5	92	11.9	14.1	-2.24	160	25.0
07/31 2004	4	92	11.7	13.0	-1.25	100	16.1
07/31 2034	4	93	11.6	12.9	-1.27	240	16.3
07/31 2104	4	94	11.6	12.7	-1.12	240	14.2
07/31 2130	3	94	11.6	11.2	0.44	260	4.3
07/31 2201	3	95	11.7	11.1	0.62	300	3.0
07/31 2231	4	93	12.1	11.7	0.41	320	4.3
07/31 2301	4	90	12.5	12.2	0.33	320	5.9
07/31 2331	5	89	12.7	12.5	0.27	320	8.4
08/01 0050	5	88	12.8	12.6	0.05	340	9.7
08/01 0120	6	87	12.8	12.9	-0.10	340	12.6
08/01 0150	6	88	12.7	13.0	-0.25	340	14.0
08/01 0220	6	88	12.6	13.0	-0.37	340	15.7
08/01 0250	7	89	12.5	12.9	-0.35	360	16.2
08/01 0337	6	90	12.4	13.0	-0.65	360	17.1
08/01 0407	5	91	12.2	12.9	-0.57	360	17.7
08/01 0437	6	92	12.0	12.8	-0.82	360	19.4
08/01 0507	7	92	11.7	12.1	-0.46	350	17.2
08/01 0537	7	93	11.2	11.6	-0.35	340	15.3
08/01 0607	6	94	10.9	11.6	-0.71	200	15.6
08/01 0637	4	99	10.0	11.4	-1.36	220	14.3

TABLE 3-4C

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*Q (m/secK)
03/01 0737	3	98	10.2	10.0	0.24	230	3.6
03/01 0819	5	97	10.5	10.0	0.53	300	4.7
03/01 0849	4	98	10.2	10.0	0.25	320	5.2
03/01 0919	3	99	10.1	11.0	-0.89	340	10.0
03/01 0949	2	100	10.0	11.7	-1.65	370	8.3
03/01 1023	2	96	10.1	11.4	-1.30	360	7.0
03/01 1053	4	99	10.0	11.6	-1.59	380	15.6
03/01 1123	5	97	10.2	11.6	-1.37	390	17.5
03/01 1153	4	98	10.7	11.6	-0.88	400	12.3
03/01 1246	4	89	11.4	12.3	-0.91	420	11.7
03/01 1316	3	89	11.4	12.5	-1.02	450	10.5
03/01 1352	4	90	11.5	12.6	-1.05	470	12.6
03/01 1422	4	90	11.6	12.6	-1.08	480	12.9
03/01 1451	3	98	11.6	12.6	-0.99	500	11.6
03/01 1503	3	96	11.6	12.5	-0.92	460	10.3
03/01 1540	3	98	11.5	12.7	-1.18	500	10.5
03/01 1600	3	95	11.6	12.4	-0.73	440	9.7
03/01 1632	5	93	11.3	12.0	-0.27	430	10.6
03/01 1659	4	94	11.6	11.4	0.15	340	7.0
03/01 1730	5	95	11.2	11.1	0.14	300	7.5
03/01 1826	4	97	10.7	11.1	-0.44	340	10.2
03/01 1903	3	97	10.5	11.1	-0.62	340	7.4
03/01 1941	2	99	10.4	12.1	-1.66	360	9.7
03/01 2040	1	99	10.4	12.9	-2.49	380	8.4
03/01 2130	1	100	10.3	12.6	-2.35	360	9.3
03/01 2200	2	100	10.2	12.5	-2.25	355	12.4
03/01 2241	3	101	9.9	12.2	-2.30	380	15.5
03/01 2311	3	101	10.0	12.4	-2.37	390	16.0
03/01 2341	3	101	10.3	13.0	-2.72	400	17.5
03/02 0036	3	99	10.6	13.3	-2.72	400	19.0
03/02 0106	3	100	10.6	13.4	-2.78	400	20.4
03/02 0136	4	100	10.6	13.2	-2.59	400	23.2
03/02 0206	3	100	10.5	13.0	-2.47	400	18.2
03/02 0236	2	101	10.4	13.1	-2.71	400	16.0
03/02 0306	3	101	10.3	13.2	-2.91	400	19.1

[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	TS (C)	T-TS (C)	Zi (m)	10**3*[illegible] ([illegible])
03/02 0437	4	100	10.2	13.3	-3.10	400	23.0
03/02 0507	4	100	10.3	13.1	-2.80	410	21.8
03/02 0537	6	96	10.5	12.8	-2.31	420	20.3
03/02 0607	7	99	10.5	12.8	-2.22	420	34.5
03/02 0630	6	98	10.4	12.7	-2.28	420	29.5
03/02 0705	5	98	10.5	13.2	-2.72	430	30.7
03/02 0758	4	98	10.7	14.2	-3.52	435	25.3
03/02 0835	4	98	10.8	13.4	-2.61	440	25.2
03/02 0905	5	99	10.4	12.6	-2.20	450	27.4
03/02 0935	5	100	10.0	11.7	-1.72	460	26.9
03/02 1005	5	96	9.9	11.0	-1.10	470	17.0
03/02 1023	5	95	10.0	11.4	-1.43	470	13.0
03/02 1052	5	97	9.9	11.4	-1.45	470	18.6
03/02 1130	3	95	10.1	12.7	-2.66	470	20.3
03/02 1203	2	95	10.5	13.1	-2.56	470	11.5
03/02 1229	2	95	11.1	13.0	-1.91	470	9.5
03/02 1310	4	94	11.2	12.9	-1.73	480	16.1
03/02 1340	4	93	11.3	13.1	-1.85	430	15.2
03/02 1430	4	93	11.4	13.1	-1.65	430	16.6
03/02 1507	5	91	11.6	13.0	-1.46	430	16.6
03/02 1701	5	92	11.6	13.1	-1.51	460	25.1
03/02 1721	5	93	11.5	13.2	-1.75	440	26.4
03/02 1755	5	94	11.2	13.2	-1.99	440	25.1
03/02 1837	6	96	10.4	12.9	-2.44	360	30.8
03/02 1907	5	96	10.0	12.8	-2.78	400	23.3
03/02 1937	3	97	10.0	12.2	-2.20	400	17.5
03/02 2000	3	97	9.9	11.5	-1.70	400	13.7
03/02 2030	2	97	9.8	11.9	-2.09	400	10.0
03/02 2101	3	98	9.8	12.1	-2.33	400	14.7
03/02 2137	3	99	9.5	12.8	-3.34	360	24.1
03/02 2155	1	99	9.4	12.8	-3.45	480	11.9
03/02 2243	2	99	9.2	12.2	-2.95	400	12.8
03/02 2313	2	100	9.3	11.8	-2.43	360	12.1
03/02 2343	2	100	9.5	11.7	-2.22	380	12.4
03/02 2359	3	100	9.5	11.8	-2.27	390	15.2

TABLE8-NC

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10*3*Qo (m/secK)
08/03 0130	3	98	9.6	12.6	-2.98	420	20.2
08/03 0200	3	98	9.8	12.1	-2.35	440	15.5
08/03 0229	3	100	9.8	12.3	-2.48	440	16.0
08/03 0300	2	100	9.9	12.7	-2.76	440	13.6
08/03 0326	1	100	9.9	12.6	-2.73	460	10.9
08/03 0402	2	100	10.0	12.5	-2.48	420	10.3
08/03 0429	2	100	9.9	12.7	-2.79	420	16.0
08/03 0459	2	100	9.9	12.1	-2.26	450	10.7
08/03 0530	2	95	9.7	11.6	-1.83	460	10.0
08/03 0600	2	97	9.8	11.3	-1.52	460	8.0
08/03 0630	1	101	9.9	11.1	-1.19	460	5.2
08/03 0700	1	101	9.9	11.1	-1.22	450	6.4
08/03 0729	2	101	10.0	11.1	-1.18	460	6.9
08/03 0758	1	101	9.9	11.5	-1.60	460	7.4
08/03 0830	2	99	9.9	12.4	-2.55	460	11.5
08/03 1030	2	95	10.5	12.3	-1.77	420	10.1
08/03 1050	3	98	10.6	12.1	-1.49	420	11.1
08/03 1125	3	99	10.8	12.4	-1.68	400	13.1
08/03 1155	4	98	10.9	12.8	-1.92	400	17.3
08/03 1230	4	99	11.0	13.3	-2.34	380	19.9
08/03 1300	3	98	11.0	12.3	-1.34	340	11.5
08/03 1330	3	97	11.0	12.6	-1.59	350	10.6
08/03 1355	2	96	11.5	13.4	-1.90	330	10.9
08/03 1449	3	95	11.6	13.1	-1.47	340	13.3
08/03 1521	3	94	11.6	12.5	-0.88	350	9.4
08/03 1632	2	95	11.6	13.7	-2.06	340	13.0
08/03 1830	5	96	11.5	13.1	-1.60	280	23.0
08/03 1900	4	96	11.3	13.2	-1.91	380	20.7
08/03 2045	10	96	11.3	14.5	-3.20	240	73.3
08/03 2105	7	96	11.2	14.0	-2.80	290	44.2
08/03 2157	3	96	11.2	13.3	-2.06	260	14.6
08/03 2227	2	94	11.2	12.9	-1.67	220	10.2
08/03 2257	1	97	11.3	12.9	-1.55	250	7.8
08/03 2327	4	98	11.4	12.8	-1.37	330	14.8
08/03 2357	4	98	11.2	12.8	-1.58	390	19.0

TABLE 3-a2

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*w0 (m/sec3)
03/04 0057	4	101	10.7	13.2	-2.50	160	22.4
03/04 0127	3	101	10.9	13.2	-2.30	130	18.2
03/04 0157	3	100	10.8	13.1	-2.30	150	14.4
03/04 0227	3	99	11.0	13.1	-2.16	200	17.2
03/04 0257	1	99	11.0	13.1	-2.13	240	19.0
03/04 0327	3	93	10.3	13.1	-2.25	200	13.9
03/04 0357	2	94	10.9	13.1	-2.23	240	13.6
03/04 0427	3	100	10.7	13.1	-2.31	200	16.5
03/04 0457	2	100	10.3	13.2	-2.35	100	14.5
03/04 0527	2	99	10.7	13.3	-2.60	200	13.7
03/04 0557	1	99	10.7	13.3	-2.57	200	16.7
03/04 0627	2	99	10.7	13.3	-2.61	220	12.4
03/04 0657	2	99	10.6	13.3	-2.63	300	12.6
03/04 0730	2	99	10.7	13.2	-2.52	310	13.5
03/04 0759	1	98	10.8	13.2	-2.40	400	9.3
03/04 0859	2	99	10.5	13.2	-2.53	140	13.8
03/04 0924	1	100	10.1	12.1	-2.31	160	9.1
03/04 0957	2	100	9.8	11.7	-1.39	220	9.4
03/04 1037	3	99	10.1	11.4	-1.30	360	12.3
03/04 1107	3	100	10.1	11.7	-1.61	380	11.4
03/04 1151	4	99	10.7	12.1	-1.39	430	15.3
03/04 1230	6	98	11.1	13.0	-1.35	340	25.7
03/04 1255	5	97	11.4	12.5	-1.10	360	16.2
03/04 1331	6	97	11.7	12.4	-0.76	320	16.9
03/04 1359	6	96	11.7	12.6	-0.90	350	19.3
03/04 1429	7	96	12.0	12.8	-0.83	330	20.3
03/04 1500	8	96	12.1	13.6	-1.50	300	32.2
03/04 1530	10	96	12.2	14.1	-1.33	320	47.6
03/04 1601	10	94	12.1	14.0	-1.98	340	50.3
03/04 1631	10	95	12.0	14.1	-2.04	320	50.3
03/04 1701	9	97	12.1	13.9	-1.35	330	46.6
03/04 1930	7	97	11.9	13.9	-2.02	320	35.8
03/04 2000	9	96	12.1	14.0	-1.34	310	45.1
03/04 2026	9	95	12.5	13.8	-1.26	260	37.7
03/04 2043	9	92	12.7	13.3	-0.64	270	23.3

[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*Qo (m/sec C)
03/05 0312	9	94	13.1	14.3	-1.16	250	34.5
03/05 0342	9	91	13.0	14.3	-1.22	370	43.7
03/05 0353	9	94	13.0	14.2	-1.25	310	40.5
03/05 0435	9	94	12.8	14.2	-1.33	255	29.5
03/05 0505	9	94	12.5	14.1	-1.53	280	30.8
03/05 0535	9	95	12.2	14.2	-2.00	280	35.5
03/05 0629	10	93	11.7	14.1	-2.47	295	46.3
03/05 0701	11	99	11.6	14.1	-2.50	310	43.5
03/05 0731	10	100	11.6	13.9	-2.30	330	42.7
03/05 0801	10	99	11.5	13.8	-2.33	340	42.3
03/05 0929	8	100	11.6	14.2	-2.60	310	33.0
03/05 1001	7	100	11.6	14.2	-2.63	290	34.6
03/05 1039	8	99	11.5	14.2	-2.56	300	36.5
03/05 1105	6	98	11.6	14.2	-2.55	310	28.2
03/05 1123	5	98	11.7	14.2	-2.47	320	[illegible]
03/05 1155	6	97	11.9	14.2	-2.26	260	33.3
03/05 1215	7	97	12.0	14.2	-2.16	260	35.5
03/05 1235	7	97	12.0	14.2	-2.11	260	36.1
03/05 1300	6	98	12.1	14.0	-1.92	250	23.0
03/05 1331	6	97	12.1	14.3	-2.20	250	34.1
03/05 1400	6	97	12.1	14.3	-2.21	190	31.0
03/05 1430	6	97	12.0	14.0	-2.05	130	23.9
03/05 1530	3	97	11.8	13.5	-1.63	220	11.4
03/05 1630	3	98	11.8	13.2	-1.42	210	13.3
03/05 1700	2	97	11.8	13.3	-1.46	230	19.4
03/05 1830	2	96	11.6	13.4	-1.80	220	12.0
03/05 1900	2	99	11.5	13.3	-1.80	230	11.1
03/05 1923	3	100	11.4	13.3	-1.89	180	9.9
03/05 1956	3	101	11.4	13.0	-1.53	190	10.1
03/05 2030	3	100	11.4	13.0	-1.60	210	9.7
03/05 2057	4	97	11.5	13.0	-1.44	190	11.3
03/05 2127	2	99	11.5	12.8	-1.26	150	5.5
03/05 2159	2	99	11.5	12.8	-1.31	140	6.4
03/05 2225	1	99	11.5	12.7	-1.17	150	5.2
03/05 2259	1	97	11.9	12.9	-0.99	155	3.3

[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*Qs (m/sec)
08/05 2355	2	91	12.7	13.5	-0.80	260	4.9
08/05 0001	2	91	12.8	13.5	-0.69	245	4.3
08/05 0035	1	90	13.0	13.8	-0.88	230	12.2
08/05 0105	4	90	13.1	14.1	-0.95	245	13.9
08/05 0135	1	90	13.3	14.0	-0.71	210	13.5
08/05 0203	4	90	13.2	14.2	-0.95	190	13.3
08/05 0237	3	89	13.2	14.2	-1.02	200	10.4
08/05 0307	4	89	13.2	14.3	-1.10	200	13.5
08/05 0337	3	89	13.2	14.3	-1.11	200	10.3
08/05 0434	5	89	13.2	14.2	-0.97	180	11.4
08/05 0504	5	90	13.2	14.3	-1.07	170	13.4
08/05 0534	5	89	13.2	14.3	-1.13	190	14.2
08/05 0604	4	89	13.2	14.3	-1.15	190	10.4
08/05 0632	4	89	13.2	14.3	-1.15	190	10.7
08/05 0652	4	89	13.2	14.3	-1.11	190	16.0
08/05 0712	5	89	13.2	14.3	-1.05	195	19.9
08/05 0732	5	89	13.3	14.3	-1.02	190	17.7
08/05 0752	5	89	13.3	14.3	-0.98	190	19.6
08/05 0830	4	88	13.4	14.3	-0.86	200	13.1
08/05 0859	3	89	13.4	14.0	-0.61	190	9.6
08/05 0936	5	92	13.1	13.5	-0.36	180	13.4
08/05 1006	4	92	13.2	13.4	-0.22	210	9.7
08/05 1056	3	91	13.2	13.7	-0.43	300	8.8
08/05 1126	2	92	13.2	13.7	-0.48	300	8.6
08/05 1156	1	98	13.3	14.1	-0.75	300	8.7
08/05 1235	2	90	13.5	14.3	-0.75	310	8.3
08/05 1305	4	90	13.7	14.8	-1.11	220	16.9
08/05 1353	4	85	13.8	14.9	-1.09	190	9.7
08/05 1429	4	84	13.9	14.9	-1.03	300	10.1
08/05 1454	3	90	13.9	14.9	-1.10	300	8.2
08/05 1529	2	90	13.9	15.0	-1.04	310	6.1
08/05 1559	3	90	13.9	15.0	-1.07	310	8.3
08/05 1631	4	90	13.9	15.0	-1.08	300	19.3
08/05 1658	4	90	13.9	14.0	-0.10	300	9.2
08/05 1723	4	91	13.9	14.3	-0.33	230	5.9

TABLE 12

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*[illegible] ([illegible])
08/06 2002	3	91	14.1	15.1	-0.57	250	6.0
08/06 2002	3	91	14.1	15.1	-0.87	260	8.0
08/06 2032	3	91	14.3	15.0	-0.79	260	6.6
08/06 2102	3	93	14.3	14.5	-0.29	250	7.6
08/06 2132	2	92	14.4	15.2	-0.74	260	8.7
08/06 2157	2	91	14.5	15.5	-0.85	260	8.3
08/06 2223	2	92	14.5	15.5	-0.39	220	9.6
08/06 2300	2	92	14.6	15.4	-0.83	260	7.6
08/06 2330	2	92	14.4	15.5	-1.11	240	5.9
08/07 0000	3	92	14.3	15.3	-1.02	250	7.2
08/07 0030	2	92	14.4	15.4	-1.00	240	4.0
08/07 0052	2	93	14.5	15.4	-0.85	260	10.0
08/07 0114	3	94	14.5	15.1	-0.61	260	11.4
08/07 0136	4	94	14.5	15.3	-0.73	260	13.1
08/07 0158	2	92	14.6	15.3	-0.66	230	7.7
08/07 0230	2	96	14.6	15.2	-0.53	300	6.6
08/07 0300	2	97	14.4	15.0	-0.64	360	6.5
08/07 0329	1	99	11.3	13.9	0.33	240	2.3
08/07 0500	1	101	12.5	13.3	-0.74	230	2.6
08/07 0515	1	101	12.2	13.2	-1.03	390	3.1
08/07 0553	2	101	12.6	13.4	-0.50	360	4.2
08/07 0628	2	101	13.1	13.5	-0.36	310	3.6
08/07 0759	1	93	14.0	14.2	-0.20	290	2.1
08/07 0855	2	99	14.2	13.8	0.40	300	1.1
08/07 0954	1	91	14.4	14.3	0.06	355	1.5
08/07 1026	3	94	14.3	14.3	0.05	355	2.4
08/07 1124	3	94	14.2	14.8	-0.53	210	10.3
08/07 1159	3	94	14.2	14.7	-0.49	260	10.2
08/07 1241	2	92	14.1	15.1	-0.92	245	9.1
08/07 1301	2	93	14.1	15.1	-0.97	245	7.4
08/07 1321	2	92	14.2	15.5	-1.33	230	9.5
08/07 1422	7	93	13.0	15.7	-2.53	210	40.6
08/07 1442	6	97	13.0	15.2	-2.23	220	30.6
08/07 1502	4	93	13.1	15.1	-2.02	230	23.4
08/07 1601	4	97	13.2	14.8	-1.59	220	13.5

NAPGES-E

Date/Time	U (m/sec)	RH (%)	T (C)	TS (C)	T-TS (C)	Zi (m)	10↑3*w0 (m/sec)
08/07 1701	5	97	13.2	15.0	-1.83	200	27.0
08/07 1731	5	98	13.2	15.0	-1.84	235	29.6
08/07 1801	5	98	13.0	15.0	-1.96	230	30.6
08/07 1830	7	99	13.1	14.9	-1.37	240	33.7
08/07 1852	6	99	13.1	15.0	-1.86	240	31.9
08/07 1914	6	99	13.2	15.2	-2.02	260	32.6
08/07 1936	6	99	13.2	15.1	-1.88	275	28.0
08/07 1953	6	100	13.1	14.4	-1.30	290	24.1
08/07 2030	7	100	13.2	14.7	-1.55	260	29.5
08/07 2055	7	101	13.2	14.9	-1.64	260	31.3
08/07 2120	7	101	13.2	14.9	-1.62	280	30.3
08/07 2141	7	101	13.2	14.0	-0.76	290	23.2
08/07 2200	7	101	13.3	13.7	-0.43	280	11.0
08/07 2230	8	101	13.2	13.7	-0.49	260	14.1
08/07 2300	8	101	13.2	13.5	-0.30	240	12.0
08/07 2329	8	101	13.3	13.7	-0.46	240	13.2
08/07 2358	7	101	13.1	13.7	-0.54	240	13.8
08/08 0153	11	101	13.3	14.6	-1.23	250	34.5
08/08 0229	10	101	13.3	14.6	-1.23	240	31.9
08/08 0253	11	101	13.3	14.6	-1.30	220	33.9
08/08 0318	10	101	13.3	14.7	-1.33	240	32.4
08/08 0400	10	101	13.3	14.5	-1.15	210	29.2
08/08 0430	9	101	13.3	14.4	-1.09	240	25.7
08/08 0459	10	101	13.2	14.2	-0.99	240	25.4
08/08 0530	10	101	13.2	13.9	-0.64	220	20.3
08/08 0600	10	101	13.2	13.6	-0.45	220	18.5
08/08 0630	9	101	13.3	13.7	-0.49	260	17.3
08/08 0700	10	101	13.5	13.8	-0.30	280	26.0
08/08 0729	9	101	13.6	14.6	-1.00	320	36.2
08/08 0753	9	96	13.5	14.3	-0.61	300	29.7
08/08 0830	10	93	13.7	14.5	-0.88	300	35.5
08/08 0849	10	95	13.7	14.6	-0.91	320	35.4
08/08 0901	10	97	13.7	14.7	-0.93	320	37.2
08/08 0933	10	97	13.5	14.7	-1.13	340	39.1
08/08 1003	9	93	13.4	14.5	-1.13	340	37.7

[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10*3*[illegible] (m/sec K)
08/08 1103	10	97	13.4	14.5	-1.13	330	23.2
08/08 1133	9	97	13.4	14.5	-1.14	330	26.3
08/08 1203	8	97	13.4	14.5	-1.15	340	21.6
08/08 1231	8	97	13.4	14.5	-1.18	330	23.4
08/11 0430	7	93	14.7	14.5	0.24	200	6.2
08/11 0500	7	93	14.7	14.4	0.32	240	5.2
08/11 0530	6	93	14.6	14.5	0.16	250	5.8
08/11 0600	6	94	14.5	14.5	0.14	260	6.0
08/11 1553	7	92	15.2	14.6	0.58	230	15.7
08/11 1640	8	88	15.0	14.6	0.46	240	11.1
08/11 1726	8	93	15.0	14.6	0.47	230	10.7
08/11 1756	9	94	14.7	14.6	0.08	260	16.2
08/11 1857	9	95	14.0	14.6	-0.59	230	19.0
08/11 1939	8	95	14.1	14.6	-0.43	300	15.8
08/11 2000	8	95	14.3	14.6	-0.22	260	13.2
08/11 2130	7	95	14.7	14.3	0.36	190	4.7
08/11 2200	7	96	14.7	14.4	0.31	0	5.7
08/11 2229	8	96	14.8	14.5	0.31	200	5.6
08/11 2258	9	96	14.7	14.6	0.09	300	9.3
08/12 0000	8	96	14.7	14.7	-0.03	200	9.4
08/12 0026	7	96	14.5	14.7	-0.21	140	8.9
08/12 0046	5	97	14.3	14.5	-0.12	100	6.1
08/12 0106	4	97	14.3	14.3	0.01	0	8.5
08/10 0130	3	98	14.4	14.5	-0.05	0	8.3
08/12 0145	4	97	14.5	14.5	0.04	0	8.6
08/12 0200	5	96	14.6	14.5	0.11	0	4.5
08/12 0235	6	95	14.7	14.5	0.19	0	5.1
08/12 0305	7	96	14.6	14.4	0.17	200	6.3
08/12 0335	8	97	14.2	14.3	-0.10	180	9.2
08/12 0359	6	97	14.1	14.3	-0.21	190	8.6
08/12 0433	5	98	14.1	14.4	-0.33	270	7.7
08/12 0503	5	97	14.5	14.6	-0.04	200	5.3
08/12 0533	4	96	14.8	14.6	0.20	210	3.2
08/12 0558	4	97	14.6	14.5	0.09	0	3.6
08/12 0632	3	97	14.5	14.4	0.14	0	2.8

TABLE B-4C

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*Qo (m/secK)
08/12 0724	1	96	14.7	14.9	-0.25	120	4.9
08/12 0749	3	95	14.3	14.8	0.00	100	6.5
08/12 0834	2	95	14.8	14.7	0.14	100	4.7
08/12 0854	3	94	14.9	14.1	0.81	0	3.5
08/12 0930	3	96	14.3	13.9	0.35	260	4.0
08/12 0940	3	95	14.7	13.9	0.73	0	4.7
08/12 1047	5	93	14.6	14.1	0.43	140	7.6
08/12 1243	4	93	15.4	14.9	0.42	0	2.2
08/12 1400	4	92	15.6	15.1	0.49	0	2.0
08/12 1500	4	93	15.5	15.5	-0.00	0	4.7
08/12 1830	4	93	15.3	15.0	0.36	0	2.2
08/12 1900	4	95	15.1	15.3	-0.21	140	6.1
08/12 1930	5	95	15.0	14.4	0.59	0	1.2
08/12 1954	5	96	15.0	14.4	0.57	0	1.3
08/12 2030	5	96	14.9	14.0	0.83	0	-0.4
08/12 2100	5	96	14.8	14.4	0.40	240	2.2
08/12 2136	7	95	14.9	14.1	0.74	240	-0.2
08/12 2156	9	97	14.5	13.7	0.73	300	-1.6
08/12 2234	8	97	14.5	13.5	1.05	200	-3.7
08/12 2304	8	99	13.9	13.7	0.17	140	5.3
08/12 2334	6	99	13.6	14.1	-0.51	120	9.0
08/13 0004	6	97	13.6	14.1	-0.56	0	9.8
08/13 0048	5	96	14.1	13.9	0.25	0	9.3
08/13 0125	7	95	14.3	14.1	0.19	0	14.0
08/13 0155	7	93	14.4	14.2	0.21	0	14.8
08/13 0241	7	92	14.6	14.1	0.56	0	11.3
08/13 0301	8	92	14.7	14.2	0.52	0	12.9
08/13 0324	8	92	14.7	14.1	0.57	300	12.8
08/13 0358	8	92	14.7	13.8	0.93	280	-1.9
08/13 0429	11	92	14.8	14.0	0.81	200	-0.6
08/13 0456	9	92	14.7	13.8	0.94	230	-1.9
08/13 0530	9	91	14.8	13.7	1.14	300	-4.2
08/13 0553	8	92	14.8	13.6	1.20	330	-4.5
08/13 0700	8	91	14.9	14.1	0.83	310	9.0
08/13 0730	8	91	15.1	14.4	0.58	360	10.8

[illegible]-78

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10^4 s*uo (m/sec)
03/13 0830	8	91	15.1	15.0	0.10	0	18.1
03/13 0900	9	91	15.1	15.0	0.05	0	20.0
03/13 1000	11	90	15.2	15.0	0.22	0	9.4
03/13 1030	11	91	15.2	15.0	0.12	0	10.8
03/13 1100	11	91	15.2	15.1	0.08	0	10.5
03/13 1130	10	90	15.2	15.2	0.04	0	13.1
03/13 1200	11	90	15.3	15.3	0.02	0	13.3
03/13 1300	10	88	15.4	15.2	0.22	0	8.5
03/13 1330	11	87	15.3	15.0	0.34	0	9.3
03/13 1340	11	91	15.3	15.0	0.31	0	9.2
03/13 1500	10	91	15.4	15.1	0.33	240	5.4
03/13 1530	11	90	15.4	15.0	0.35	200	8.2
03/13 1600	11	90	15.4	15.1	0.37	200	7.9
03/13 1632	10	90	15.5	15.1	0.39	0	7.4
03/13 1702	10	91	15.4	15.2	0.30	260	6.3
03/13 1723	11	89	15.5	15.2	0.32	260	5.2
03/13 1758	11	90	15.5	15.3	0.27	240	10.3
03/13 1900	12	91	15.5	15.1	0.31	210	25.5
03/13 1929	12	92	15.4	15.0	0.32	200	25.4
03/13 1940	13	91	15.1	15.2	0.14	200	30.[illegible]
03/13 2035	13	90	15.4	14.7	0.70	190	20.7
03/13 2100	14	90	15.2	14.1	1.09	200	12.[illegible]
03/13 2125	14	91	15.1	14.2	[illegible]	225	17.0
03/13 2252	12	90	15.0	15.0	-0.03	360	16.2
03/13 2325	11	90	14.5	14.8	0.12	330	13.1
03/13 2355	11	90	14.3	13.9	0.[illegible]	330	-0.[illegible]
03/14 0030	10	91	14.[illegible]	14.6	0.00	340	12.5
03/14 0059	9	91	14.5	15.0	-0.51	350	19.0
03/14 0123	9	89	14.4	15.5	-1.13	390	28.3
03/14 0157	8	89	14.2	15.6	-1.45	330	35.4
03/14 0230	7	91	13.9	15.5	-1.67	300	34.1
03/14 0258	5	91	13.6	15.6	-2.01	330	23.2
03/14 0358	3	97	12.2	15.0	-2.75	320	19.9
03/14 0430	2	97	12.3	14.9	-2.61	320	16.1
03/14 0459	2	93	12.1	14.9	-2.75	340	14.7

TABLE 3-4C

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*uo (m/secK)
03/14 0534	1	101	11.4	14.6	-2.51	240	10.6
03/14 0653	2	100	11.3	15.1	-3.33	240	19.0
03/14 0735	2	93	11.3	15.5	-3.67	240	15.3
03/14 0805	2	101	11.7	15.5	-3.31	210	15.3
03/14 0835	2	101	11.7	15.5	-3.75	220	18.2
03/14 0853	3	101	11.3	15.5	-3.79	240	27.4
03/14 0930	4	101	12.0	15.5	-3.44	250	23.9
03/14 1000	3	99	12.2	15.5	-3.31	260	17.5
03/14 1025	2	96	12.1	15.6	-3.16	200	15.0
03/14 1100	2	98	12.3	15.7	-3.33	220	14.4
03/14 1130	2	98	12.5	15.8	-3.33	160	12.2
03/14 1200	2	93	12.4	16.0	-3.64	190	14.4
03/14 1229	2	97	12.4	16.0	-3.68	190	13.7
03/14 1306	2	90	12.7	16.4	-3.72	160	13.1
03/14 1326	2	97	13.0	16.6	-3.56	140	19.3
03/14 1357	2	96	13.3	16.8	-3.53	140	20.0
03/14 1438	4	99	14.8	17.2	-2.37	180	24.2
03/14 1455	5	93	13.5	16.6	-3.13	120	33.1
03/14 1513	5	95	13.1	16.0	-2.85	140	32.3
03/14 1522	5	77	13.3	16.1	-2.80	140	31.5
03/14 1554	6	100	12.7	16.0	-3.25	140	41.0
03/14 1630	6	94	13.8	16.0	-2.15	140	32.9
03/14 1755	9	93	14.1	15.4	-1.27	110	39.3
03/14 1830	9	93	14.1	15.3	-1.22	140	35.2
03/14 1930	7	94	13.9	14.1	-0.12	140	15.9
03/14 2000	7	93	14.1	14.0	0.03	160	15.2
03/14 2030	7	94	14.3	14.2	0.13	190	13.7
03/14 2100	6	92	14.5	14.5	0.07	130	13.2
03/14 2130	4	91	14.8	15.3	-0.51	260	13.7
03/14 2230	5	92	14.7	15.0	-0.35	300	14.7
03/14 2300	5	92	14.5	14.9	-0.32	230	13.5
03/14 2330	4	92	14.6	14.8	-0.23	260	6.3
03/15 0000	4	92	14.5	14.3	-0.20	260	6.1
03/15 0034	3	92	14.6	14.9	-0.23	280	3.0
03/15 0101	3	92	14.7	15.0	-0.30	290	7.5

TABLE 3-[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10^3* [illegible] (m/sec)
03/15 0155	3	91	14.7	15.0	-0.36	230	1.3
03/15 0230	3	90	14.7	15.1	-0.47	300	4.[illegible]
03/15 0300	3	89	14.[illegible]	15.2	-0.55	270	6.3
03/15 0331	[illegible]	90	14.[illegible]	15.2	-0.[illegible]	300	6.[illegible]
03/15 0400	4	90	14.5	15.1	-0.51	220	3.1
03/15 0423	4	90	14.5	15.1	-0.[illegible]	150	7.3
03/15 0500	5	90	14.5	15.1	-0.56	170	11.1
03/15 0530	6	90	14.4	15.1	-0.53	160	12.4
03/15 0633	4	[illegible]	14.5	15.1	-0.5[illegible]	220	8.0
03/15 0700	3	90	14.4	14.9	-0.53	250	8.0
03/15 0725	1	91	14.[illegible]	15.1	-0.73	250	6.3
03/15 0750	0	94	14.2	14.4	-0.17	240	2.4
03/15 0830	1	95	14.1	14.7	-0.57	240	5.3
03/15 0902	2	93	14.4	15.4	-0.[illegible]7	210	8.4
03/15 0932	2	93	14.5	15.5	-0.91	180	9.1
03/15 0957	2	91	14.7	15.5	-0.[illegible]	310	[illegible]
03/15 1123	4	91	14.3	15.9	-1.17	330	16.1
03/15 1200	4	91	14.7	16.1	-1.37	335	14.4
03/15 1230	4	92	14.7	16.1	-1.36	350	13.4
03/15 1258	3	91	14.7	15.9	-1.20	390	14.1
03/15 1330	4	91	14.5	15.6	-1.11	400	15.1
03/15 1400	4	92	14.3	15.5	-1.29	330	15.1
03/15 1430	3	85	14.2	15.7	-1.47	335	15.1
03/15 1500	3	89	14.1	15.6	-1.57	400	14.5
03/15 1539	3	90	14.2	15.3	-1.61	390	15.4
03/15 1558	4	91	14.3	15.3	-1.91	350	20.1
03/15 1630	4	91	14.2	15.8	-1.56	340	15.4
03/15 1730	4	91	14.1	15.3	-1.72	370	15.2
03/15 1827	3	91	14.4	15.[illegible]	-1.45	345	11.4
03/15 1900	3	91	14.4	15.7	-1.23	310	9.3
03/15 1912	2	92	14.4	15.6	-1.27	355	7.0
03/15 2003	1	91	14.2	15.8	-1.55	400	7.1
03/15 2033	2	91	14.1	15.7	-1.57	440	12.1
03/15 2059	3	93	13.4	15.7	-1.3[illegible]	440	16.4
03/15 2131	2	95	13.7	15.7	-2.01	390	5.5

[illegible]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*w0 (m/secK)
03/15 2230	1	96	13.7	15.6	-1.93	460	5.1
03/15 2255	2	96	13.6	15.6	-1.93	390	9.6
03/15 2330	2	97	13.1	15.6	-2.15	440	11.1
03/15 2357	3	99	13.0	15.7	-2.66	460	17.7
03/16 0010	2	100	13.1	15.4	-2.33	480	14.9
03/16 0100	5	99	13.4	15.4	-2.05	430	25.1
03/16 0120	5	99	13.4	15.2	-1.72	430	21.0
03/16 0140	6	98	13.6	15.3	-1.73	480	27.5
03/16 0200	6	98	13.6	15.4	-1.78	500	29.4
03/16 0230	7	96	14.3	15.5	-1.12	500	26.5
03/16 0259	7	96	14.4	15.5	-1.15	460	29.9
03/16 0318	7	94	14.5	15.6	-1.13	440	29.4
03/16 0352	7	94	14.5	15.6	-1.11	420	27.6
03/16 0430	6	93	14.6	15.6	-0.97	440	24.6
03/16 0525	7	89	14.8	15.5	-0.73	450	14.3
03/16 0556	7	87	14.7	15.7	-0.91	440	17.3
03/16 0630	7	88	14.7	15.5	-0.84	330	16.9
03/16 0700	11	85	14.6	15.5	-0.93	390	44.4
03/16 0730	8	87	14.6	15.5	-0.89	400	26.6
03/16 0754	7	87	14.7	15.7	-1.02	380	27.5
03/16 0900	6	89	14.7	15.4	-0.71	360	26.8
03/16 0930	8	90	14.6	14.7	-0.06	360	19.3
03/16 1000	9	88	14.3	14.7	0.03	360	19.1
03/16 1020	9	85	15.0	15.2	-0.23	360	26.4
03/16 1058	10	84	15.0	15.1	-0.10	360	25.3
03/16 1130	9	87	15.0	15.1	-0.16	360	13.9
03/16 1210	9	86	15.0	15.2	-0.18	360	14.0
03/16 1233	9	85	15.1	15.3	-0.16	340	14.1
03/16 1430	10	86	15.2	15.3	-0.13	320	15.7
03/16 1500	10	85	15.2	15.4	-0.17	330	15.9
03/16 1530	11	87	15.3	15.3	-0.09	280	14.7
03/16 1624	12	85	15.3	15.3	-0.01	200	15.1
03/16 1624	12	86	15.3	15.3	-0.01	200	15.1
03/16 1700	12	85	15.3	15.3	0.06	300	14.2
03/16 1730	12	84	15.3	15.3	0.07	300	14.2

TABLES-WC

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*Qo (m/secC)
08/16 1830	10	85	15.4	15.2	0.13	300	11.4
08/16 1900	11	84	15.4	15.1	0.32	360	9.6
08/16 1927	11	82	15.3	14.4	0.84	360	2.1
08/16 1954	11	83	15.2	14.7	0.48	360	7.3
08/16 2030	10	83	15.3	15.3	-0.50	360	34.3
08/16 2100	11	82	15.4	15.7	-0.39	360	36.7
08/16 2130	13	81	15.4	15.6	-0.16	360	36.9
08/16 2155	14	79	15.5	15.5	-0.01	360	35.6
08/16 2230	12	81	15.5	15.5	-0.07	360	40.2
08/16 2250	12	80	15.4	15.5	-0.09	360	36.6
08/16 2310	11	83	15.3	15.4	-0.05	360	36.7
08/17 0000	13	83	15.3	15.4	-0.11	360	40.7
08/17 0053	10	81	15.6	15.3	-0.23	360	30.5
08/17 0130	11	84	14.5	14.8	-0.28	360	30.5
08/17 0200	12	84	14.5	14.3	-0.28	360	34.4
08/17 0230	9	85	14.4	15.0	-0.52	360	30.6
08/17 0245	7	85	14.3	15.1	-0.81	360	25.7
08/17 0330	8	85	14.2	15.1	-0.83	360	25.4
08/17 0347	8	87	14.1	15.0	-0.94	420	23.3
08/17 0430	6	87	13.9	14.3	-0.34	410	19.4
08/17 0451	8	83	13.3	14.9	-1.02	460	15.4
08/17 0500	8	89	13.5	13.9	-0.22	510	11.3
08/17 0535	6	87	13.5	13.7	-0.23	600	12.0
08/17 0705	6	83	13.5	13.5	-0.01	560	6.3
08/17 0735	4	86	13.1	13.5	-0.42	540	6.6
08/17 0805	2	89	12.1	13.1	-1.04	530	5.7
08/17 0835	3	83	13.3	14.4	-1.10	620	9.3

Ot:

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10**3*[illegible] (m/sec)
06/02 1358	4	95	11.3	13.7	-1.43	240	11.0
06/02 1428	4	97	11.5	13.6	-1.55	240	11.2
06/02 1529	4	96	11.5	13.9	-2.39	200	12.1
06/02 1559	4	97	11.4	14.1	-2.75	220	14.4
06/02 1629	4	97	11.7	13.9	-2.23	240	13.5
06/02 1659	5	98	11.6	13.8	-2.13	240	13.3
06/02 1729	4	99	11.3	13.8	-2.02	260	10.7
06/02 1759	4	100	11.5	13.7	-2.10	260	11.5
06/03 0959	5	94	11.6	14.3	-2.69	350	18.0
06/03 1029	5	95	11.6	13.6	-1.99	310	12.5
06/03 1059	4	96	11.4	13.5	-2.04	290	12.5
06/03 1158	9	92	12.7	14.7	-2.00	210	25.0
06/03 1229	6	95	12.1	13.8	-1.73	210	15.7
06/03 1359	6	93	12.5	13.6	-1.07	290	8.0
06/03 1429	6	93	12.6	13.7	-1.16	330	8.5
06/03 1459	5	92	12.5	13.8	-1.33	330	6.4
06/03 1529	5	93	12.8	13.9	-1.15	330	6.0
06/03 1559	4	94	12.9	14.0	-1.12	360	5.0
06/03 1759	4	95	12.7	13.4	-0.71	330	3.5
06/03 1829	5	95	12.5	13.6	-1.10	340	8.1
06/04 1025	3	95	11.4	14.0	-2.59	540	12.6
06/04 1027	3	95	11.4	13.5	-2.08	540	8.5
06/04 1029	1	95	11.3	13.5	-2.26	540	4.7
06/04 1100	3	94	11.4	13.9	-2.50	540	12.2
06/04 1130	2	92	11.5	13.6	-2.12	540	6.3
06/04 1200	2	92	11.7	13.6	-1.97	540	7.2
06/04 1335	5	91	11.9	14.4	-2.45	430	15.4
06/04 1400	5	91	11.8	13.6	-1.77	430	13.2
06/04 1445	5	90	12.1	13.4	-1.31	460	9.5
06/04 1516	5	90	12.1	13.5	-1.52	460	12.3
06/04 1546	5	91	12.1	13.4	-1.31	460	11.6
06/04 1525	5	93	11.9	14.4	-2.53	600	15.0
06/04 1559	6	95	11.3	13.8	-3.02	600	17.2
06/04 1529	5	93	11.9	13.2	-1.34	520	11.3
06/04 1559	5	93	12.1	13.1	-1.00	520	8.0

Jeq

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10*3*Q0 (m/secK)
06/04 2050	7	92	12.1	13.3	-1.20	520	11.1
06/05 0929	2	95	11.4	13.6	-2.22	350	5.5
06/05 1029	3	93	11.8	13.7	-1.91	270	8.1
06/05 1059	5	92	12.0	13.5	-1.47	270	9.1
06/05 1129	5	95	12.0	13.8	-1.78	270	12.2
06/05 1159	5	95	12.0	13.9	-1.93	200	14.0
06/05 1229	5	93	12.2	13.8	-1.66	200	12.0
06/05 1259	6	91	12.7	13.6	-0.83	180	6.6
06/05 1329	7	91	13.0	13.7	-0.63	110	5.9
06/05 1429	3	59	13.2	13.7	-0.59	160	5.6
06/05 1629	5	84	14.1	14.4	-0.34	190	3.4
06/05 1659	6	88	13.4	14.5	-1.09	250	9.0
06/05 1729	5	88	13.4	14.0	-0.60	250	4.3
06/05 1759	[illegible]	88	13.3	13.7	-0.39	300	3.2
06/05 1921	5	87	13.3	13.7	-0.34	260	2.5
06/05 1926	4	83	13.6	14.3	-0.45	250	3.1
06/05 1951	5	84	13.8	14.2	-0.43	260	3.3
06/05 2016	4	84	13.8	13.6	0.27	260	-0.7
06/05 2041	3	83	14.0	13.5	0.51	260	-1.3
06/05 2058	3	84	14.0	13.6	0.42	200	-0.3
06/06 1059	6	85	12.9	14.4	-1.46	320	13.0
06/06 1129	6	85	12.9	14.2	-1.34	320	12.1
06/06 1258	9	83	13.1	14.5	-1.42	320	15.0
06/06 1329	8	81	13.2	13.6	-0.44	320	6.6
06/06 1524	7	74	14.3	14.6	-0.31	290	6.6
06/06 1559	5	77	13.9	14.6	-0.74	290	7.0
06/06 1631	13	77	13.5	13.8	-0.29	290	16.3
06/06 1734	5	76	13.6	14.1	-0.50	290	5.5
06/07 1459	7	93	12.1	14.5	-2.38	260	23.6
06/07 1526	6	100	11.7	14.2	-2.47	200	22.6
06/07 1554	6	97	12.2	13.2	-1.06	150	8.5
06/07 1629	7	93	12.7	12.9	-0.15	150	1.6
06/07 1659	6	91	12.9	13.0	-0.16	150	1.3
06/07 1757	9	80	13.9	14.3	-0.38	150	15.5
06/07 1829	8	73	14.4	14.1	0.21	150	1.7

Ct]

Date/Time	U (m/sec)	RH (%)	T (C)	Ts (C)	T-Ts (C)	Zi (m)	10↑3*θ0 (m/secK)
06/07 1929	9	76	14.0	12.9	1.07	150	-8.6
06/07 1959	7	75	14.1	12.9	1.21	150	-7.7
06/07 2029	6	89	13.7	13.0	0.71	150	-0.2
06/05 0959	2	94	11.7	13.9	-2.22	350	7.1
06/05 1359	7	89	13.2	13.9	-0.66	160	7.1
06/07 1259	8	92	12.5	13.7	-1.22	200	11.0
06/07 1329	7	91	12.5	12.9	-0.42	200	4.1
06/07 1359	7	90	12.7	13.0	-0.30	200	2.3
06/08 0324	2	79	15.1	14.9	0.16	690	[illegible]
06/08 0344	2	[illegible]	14.6	14.9	-0.03	690	0.5
06/08 0904	2	76	14.6	14.6	0.23	680	0.0
06/08 0924	1	87	13.0	13.4	-0.33	680	[illegible]
06/08 0944	1	88	13.1	13.6	-0.45	680	1.2

Appendix B

Calculated results: The results are arranged in chronological order for each of the five cruises. Included are wind speed and direction, stability (Z/L), the scaling parameters U_* and T_*, inversion height, mixing rate, and mixing time. When an asterisk appears after the mixing time, it means that the relative wind was more than 30° off the bow.

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Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
10/04-1516	4.0	280	-0.299	0.142	-0.024	100	0.283	6
10/04-1820	4.0	310	-0.491	0.145	-0.052	140	0.383	6
10/04-1941	4.5	325	-0.254	0.162	-0.030	110	0.317	6
10/04-2000	4.1	315	-0.476	0.149	-0.059	140	0.391	6
10/04-2200	5.5	310	-0.167	0.203	-0.039	92	0.327	5
10/04-2300	5.5	300	-0.156	0.203	-0.031	110	0.337	5
10/05-0050	3.0	250	-0.349	0.103	-0.013	180	0.263	11
10/05-0123	3.0	250	-0.229	0.101	-0.007	180	0.223	13
10/05-0217	4.0	340	-0.165	0.140	-0.015	200	0.239	12
10/05-0311	2.5	325	-0.580	0.085	-0.023	200	0.269	12
10/05-0327	2.5	330	-0.484	0.085	-0.018	212	0.256	14
10/05-0500	2.9	310	-0.169	0.097	-0.004	160	0.184	14
10/05-0522	3.0	325	-0.390	0.103	-0.022	210	0.290	12
10/05-0641	2.5	305	-0.758	0.086	-0.033	205	0.301	11
10/05-0740	2.2	340	-3.782	0.082		220		
10/05-0838	1.5	345	-2.492	0.056	-0.050	218	0.299	12
10/05-0851	1.3	345	-2.980	0.050	-0.048	230	0.287	13
10/05-0903	1.0	345	-4.436	0.041	-0.043	200	0.254	13
10/05-0915	0.9	345	-9.344	0.039	-0.009	120	0.256	8
10/05-0927	0.6	345	-14.501	0.028	-0.079	80	0.194	7
10/05-1027	2.3	345	-1.317	0.081	-0.056	90	0.259	6
10/05-1054	2.5	245	-0.719	0.086	-0.024	130	0.251	9
10/05-1210	3.4	260	-0.967	0.124	-0.088	165	0.436	6
10/05-1222	3.5	290	-0.901	0.128	-0.086	180	0.452	7
10/05-1310	4.4	28	-0.251	0.158	-0.024	200	0.374	9
10/05-1322	4.4	270	-0.420	0.161	-0.058	220	0.471	8
10/05-1440	6.0	260	-0.223	0.227	-0.063	210	0.529	7
10/05-1729	5.8	230	-0.154	0.215	-0.028	110	0.355	5
10/05-1837	5.6	300	-0.149	0.207	-0.034	240	0.440	9
10/05-2030	5.1	310	-0.383	0.191	-0.090	230	0.555	7
10/05-2150	3.7	350	-0.745	0.135	-0.067	280	0.521	9
10/05-2310	3.8	330	-0.562	0.138	-0.081	260	0.501	9
10/06-0014	4.0	330	-0.626	0.147	-0.087	220	0.493	7
10/06-0117	3.5	330	-0.713	0.126	-0.071	330	0.508	11
10/06-0149	3.4	350	-0.839	0.123	-0.080	350	0.532	11

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Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
10/06-0240	3.4	360	-0.792	0.123	-0.072	350	0.520	11
10/06-0340	3.1	360	-0.996	0.112	-0.079	240	0.451	9
10/06-0441	3.3	350	-0.974	0.120	-0.088	270	0.499	9
10/06-0540	3.3	345	-1.059	0.120	-0.097	340	0.557	10
10/06-0640	2.8	350	-1.495	0.102	-0.098	350	0.533	11
10/06-0910	3.1	300	-1.204	0.113	-0.095	220	0.471	8
10/06-1150	4.4	300	-0.219	0.157	-0.022	300	0.407	12
10/06-1330	5.6	323	-0.160	0.207	-0.034	260	0.463	9
10/06-1432	6.4	320	-0.099	0.239	-0.026	220	0.430	9
10/06-1610	7.2	300	-0.079	0.273	-0.028	300	0.507	10
10/06-1734	6.8	290		0.267		290		
10/06-1830	6.5	300		0.258		290		
10/06-2010	5.9	300	-0.084	0.217	-0.021	260	0.392	11
10/06-2130	5.6	300	-0.099	0.205	-0.019	260	0.389	11
10/06-2230	6.1	300	-0.107	0.226	-0.029	250	0.437	10
10/06-2330	6.5	300	-0.086	0.243	-0.027	240	0.430	9
10/07-0030	6.0	310	-0.111	0.222	-0.031	240	0.430	9
10/07-0221	6.0	310	-0.169	0.225	-0.054	300	0.541	9
10/07-0310	6.2	300	-0.106	0.231	-0.033	300	0.474	11
10/07-0340	6.3	300	-0.105	0.235	-0.034	220	0.434	8
10/07-0450	6.8	295	-0.088	0.256	-0.035	280	0.484	10
10/07-0530	7.3	290	-0.091	0.279	-0.045	300	0.546	9
10/07-0638	8.1	290	-0.066	0.312	-0.040	320	0.562	9
10/07-0810	7.0	330	-0.114	0.266	-0.052	260	0.536	8
10/07-0910	5.8	340	-0.240	0.218	-0.071	320	0.603	9
10/07-1210	4.0	180	-0.932	0.149	-0.132	170	0.526	5
10/07-1410	6.0	280	-0.288	0.229	-0.089	100	0.455	4
10/07-1610	4.3	270	-0.228	0.153	-0.022	180	0.340	9
10/07-1910	3.5	330	-0.810	0.127	-0.077			
10/07-2000	5.2	330	-0.346	0.195	-0.062			
10/07-2110	9.0	360	-0.016	0.344	0.022			
10/07-2240	5.5	80	-0.037	0.197	0.008			
10/08-0010	3.9	11	-0.294	0.138	-0.031	100	0.276	6
10/08-0110	3.9	280	-0.442	0.140	-0.053	100	0.322	5
10/08-0411	2.6	310	-1.175	0.092	-0.063	60	0.248	4

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Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
10/08-0520	4.0	270	-0.463	0.145	-0.060	140	0.377	6
10/08-0621	2.0	15	-0.880	0.069	-0.021	160	0.232	11
10/08-0718	2.5	15	-0.842	0.087	-0.037	160	0.288	9
10/08-0809	3.0	20	-0.254	0.102		120		
10/08-0854	3.1	125	-0.052	0.102				
10/08-0956	3.4	310		0.139	-0.849			
10/08-1241	3.9	350	-0.510	0.141	-0.069	100	0.341	5
10/08-1253	3.7	350	-0.723	0.135	-0.090	100	0.366	5
10/08-1305	3.5	350	-0.615	0.125	-0.065	160	0.377	7
10/08-1317	3.0	350	-0.379	0.103	-0.024	120	0.239	8
10/08-1428	3.0	320	-0.590	0.105	-0.036	140	0.296	8
10/08-1440	3.0	330	0.668	0.075	0.035	130		
10/08-1452	3.0	350	0.436	0.081	0.029	200		
10/08-1504	3.0	350	0.428	0.081	0.029	130		
10/08-1516	3.0	350	1.015	0.067	0.040	140		
10/08-1642	3.0	0		0.111		300		
10/08-1654	3.0	0		0.111		320		
10/08-2011	4.1	350	-0.192	0.144	-0.023	140	0.280	8
10/08-2017	4.1	350	-0.118	0.142	-0.011	200	0.263	13
10/08-2210	5.0	350	-0.297	0.185	-0.065	210	0.478	7
10/08-2310	5.5	350	-0.200	0.204	-0.050	140	0.403	6
10/09-0210	6.0	350	-0.098	0.222	-0.024	100	0.306	5
10/08-0321	6.5	350	-0.092	0.243	-0.030	100	0.330	5
10/09-0412	6.5	340	-0.168	0.247	-0.064	80	0.381	3
10/09-0510	6.9	0		0.290		100		
10/09-0610	7.5	340	-0.130	0.290	-0.071	120	0.472	4
10/09-0712	8.5	335	-0.086	0.330	-0.060	160	0.516	5
10/09-0759	8.4	335	-0.070	0.325	-0.046	180	0.493	6
10/09-0811	8.2	335	-0.135	0.321	-0.096	180	0.608	5
10/09-0835	8.2	335	-0.131	0.321	-0.093	220	0.643	6
10/09-0859	8.1	335	-0.152	0.318	-0.108	220	0.670	5
10/09-0925	8.0	335	-0.152	0.314	-0.106	260	0.699	6
10/09-0951	7.6	335	-0.196	0.298	-0.116	260	0.720	6
10/09-1212	6.8	340	-0.235	0.263	-0.113	260	0.676	6
10/09-1220	6.8	340	-0.235	0.263	-0.113	280	0.693	7

CEWCOM-76

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
10/09-1332	6.7	340	-0.238	0.258	-0.108	260	0.667	6
10/09-1341	6.7	340	-0.215	0.258	-0.096	260	0.642	7
10/10-0700	4.4	330	-0.143	0.156	-0.025	360	0.382	16
10/10-0732	3.7	320	-0.188	0.128	-0.021	380	0.347	18
10/10-0820	1.0	310	-2.655	0.039	-0.028	380	0.256	25
10/10-0920	3.0	320	-0.356	0.103	-0.025	340	0.331	17
10/10-1020	5.0	325	-0.116	0.180	-0.024	360	0.407	15
10/10-1129	5.1	330	-0.120	0.184	-0.025	340	0.412	14
10/10-1310	6.0	350	-0.091	0.221	-0.026	300	0.432	12
10/10-1603	7.6	325	-0.057	0.290	-0.024	180	0.407	7
10/10-1848	5.3	300	-0.115	0.193	-0.025	160	0.330	8
10/10-2250	4.9	260	-0.140	0.176	-0.024	80	0.255	5
10/11-0600	1.5	10	-1.677	0.055	-0.027	340	0.295	19
10/11-0630	1.6	0	-1.532	0.058	-0.027	360	0.307	20
10/11-0857	1.2	0	-3.300	0.047	-0.037	400	0.332	20
10/11-0922	1.0		-3.906	0.040	-0.029	340	0.284	20
10/11-1048	3.4		-0.374	0.119	-0.025	260	0.352	12
10/11-1223	3.1		-0.529	0.108	-0.025	220	0.340	11
10/11-1325	4.4		-0.242	0.158	-0.025	160	0.343	8
10/11-1422	3.6		-0.399	0.127	-0.025	200	0.351	9
10/11-1744	3.3		-0.459	0.116	-0.025	300	0.383	13
10/12-0758	1.9		-1.559	0.068	-0.032	420	0.379	18
10/12-0851	2.4					300		

APG

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	u* (m/sec)	θ* (K)	Zi (m)	w* (m/sec)	t (min)
07/19-0000	1.5	233	-4.340	0.060	-0.117	280	0.436	11
07/19-0020	1.0	333	-3.206	0.034	-0.104	330	0.397	14
07/19-0100	0.5	317	-13.190	0.025	-0.075	320	0.235	13
07/19-0140	0.3	11	-29.205	0.014	-0.035	190	0.166	13
07/19-1620	3.1	294	-1.125	0.112	-0.077	470	0.535	13
07/19-1650	3.9	272	-0.754	0.142	-0.085	500	0.553	13
07/19-1710	3.5	275	-0.329	0.132	-0.033	490	0.559	12
07/19-1730	3.7	235	-0.889	0.136	-0.036	430	0.565	12
07/19-2000	4.4	277	-0.216	0.155	-0.023	500	0.477	17
07/19-2040	3.0	230	-1.134	0.108	-0.032	540	0.597	15
07/19-2120	1.5	5	-4.174	0.060	-0.092	590	0.525	19
07/19-2140	1.5	318	-4.291	0.060	-0.096	600	0.534	19
07/20-0700	3.6	285	-0.542	0.129	-0.051	160	0.369	7
07/20-0740	2.5	260	-1.433	0.089	-0.058	230	0.400	10
07/20-0900	1.5	250	-2.852	0.058	-0.053	160	0.290	9
07/20-0920	1.5	250	-2.502	0.053	-0.044	130	0.233	10
07/20-1240	2.0	195	-1.645	0.071	-0.036	360	0.385	16
07/20-1300	1.8	206	-1.159	0.064	-0.020	350	0.332	13
07/20-1320	2.0	220	-0.773	0.069	-0.013	230	0.264	13
07/20-1800	7.2	185	0.045	0.259	0.036	80		
07/20-1900	6.2	275	0.079	0.213	0.041	140		
07/20-1920	7.2	250	0.053	0.257	0.042	160		
07/20-1940	7.2	270	-0.004	0.257	0.013	260	0.059	63
07/20-2000	5.7	270	-0.024	0.203	0.007	280	0.223	20
07/20-2020	5.1	270	-0.056	0.133	-0.001	240	0.273	15
07/20-2040	3.6	230	-0.153	0.123	-0.005	200	0.248	13
07/20-2120	3.6	270	-0.150	0.123	-0.005	240	0.253	15
07/20-2140	3.5	250	-0.186	0.120	-0.009	240	0.272	15
07/20-2220	2.0	230	-1.506	0.071	-0.043	340	0.376	15
07/20-2230	2.3	290	-0.931	0.069	-0.023	340	0.305	19
07/20-2300	2.3	302	-0.356	0.080	-0.030	300	0.323	15
07/20-0000	2.6	255	-0.470	0.087	-0.020	280	0.238	16
07/21-0040	2.6	259	-0.441	0.087	-0.019	310	0.290	13
07/21-0100	1.3	305	-0.876	0.063	-0.019	200	0.227	15
07/21-0120	1.0	141	-1.656	0.039	-0.014	270	0.193	23

ARG

Date/Time	Wind (m/sec)	(dir)	z/L	u* (m/sec)	T* (K)	zi (m)	w* (m/sec)	t (min)
07/21-0405	3.1	35	-0.595	0.108	-0.043	240	0.370	11
07/21-0425	2.5	125	-1.106	0.088	-0.058	320	0.406	13
07/21-0445	2.6	142	-0.994	0.090	-0.054	330	0.425	15
07/21-0505	2.1	125	-1.443	0.073	-0.049	360	0.380	16
07/21-0545	1.5	160	-1.497	0.056	-0.025	455	0.319	24
07/21-0605	0.2	160	-43.572	0.012	-0.031	450	0.213	36
07/21-0645	1.0	100	-3.525	0.040	-0.030	430	0.310	26
07/21-0705	1.5	100	-1.591	0.055	-0.026	460	0.325	23
07/21-0845	3.1	95	-0.533	0.108	-0.040	475	0.457	17
07/21-0905	2.1	91	-1.153	0.072	-0.032	430	0.368	19
07/21-0945	1.0	129	-4.270	0.041	-0.040	360	0.310	19
07/21-1005	1.5	135	-1.164	0.055	-0.014	310	0.252	21
07/21-1025	0.2	200	-39.449	0.012	-0.024	300	0.176	23
07/21-1045	0.3	235	-3.474	0.033	-0.015	280	0.212	22
07/21-1105	3.6	270	-0.035	0.120	0.005	260	0.143	30
07/21-1305	7.2	253	0.006	0.264	0.012	180		
07/21-1325	7.0	250	0.000	0.256	0.009	210		
07/21-1345	6.5	280	-0.003	0.237	0.008	200	0.079	42
07/21-1405	6.7	285	-0.020	0.246	0.000	200	0.244	14
07/21-1505	6.5	230	-0.045	0.240	-0.007	200	0.318	10
07/21-1620	7.0	260	-0.021	0.260	0.003	200	0.256	13
07/21-1720	5.5	270	-0.053	0.198	-0.003	120	0.234	8
07/21-1945	4.0	250	-0.397	0.144	-0.038	250	0.428	10
07/21-2030	2.5	225	-1.328	0.089	-0.059	150	0.336	7
07/21-2110	1.0	220	-5.585	0.042	-0.053	300	0.325	15
07/21-2130	1.5	220	-2.618	0.056	-0.043	310	0.341	15
07/22-0550	2.0	130	-0.209	0.065	0.000	205	0.143	24
07/22-0610	1.5	130	-0.550	0.053	-0.005	220	0.169	22
07/22-0710	0.2	140	-35.247	0.012	-0.030	240	0.157	25
07/22-0730	0.2	120	-29.493	0.012	-0.024	240	0.144	28
07/22-0750	0.2	140	-32.346	0.012	-0.028	240	0.152	26
07/22-0810	0.2	150	-21.592	0.011	-0.015	245	0.126	33
07/22-0830	2.1	180	-0.631	0.070	-0.018	230	0.238	16
07/22-0910	1.0	307	-2.365	0.040	-0.024	210	0.205	17
07/22-0930	0.5	270	-0.285	0.023	-0.020	220	0.165	22

ARB

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
07/22-1010	2.6	260	-0.763	0.089	-0.040	240	0.330	12
07/22-1030	2.0	250	-1.369	0.071	-0.045	260	0.325	13
07/22-1050	0.5	305	-10.055	0.024	-0.033	260	0.213	20
07/23-1440	2.5	250	1.332	0.050	0.031	280		
07/23-1505	3.3	215	0.235	0.114	0.039	310		
07/23-1645	4.5	275	-0.036	0.163	0.001	320	0.307	17
07/23-1725	4.9	262	-0.011	0.170	0.012	355	0.112	53
07/23-1745	2.1	244	-0.268	0.068	0.004	350	0.138	31
07/23-2340	1.7	250	1.943	0.029	0.017	500		
07/24-0040	2.1	231	0.527	0.052	0.017	155		
07/24-0100	1.8	270	0.776	0.043	0.017	120		
07/24-0120	1.5	236	0.767	0.037	0.014	170		
07/24-0240	1.7	140	0.381	0.046	0.015	120		
07/24-0300	1.5	136	0.455	0.041	0.015	160		
07/24-0420	1.0	210	0.044	0.032	0.011	140		
07/24-1000	1.0	269	-0.091	0.034	0.021	165		
07/25-2220	5.0	270	0.340	0.150	0.068	160		
07/25-2320	5.0	230	0.231	0.157	0.051	160		
07/26-0420	1.4	340	3.147	0.019	0.012	90		

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Date/Time	Wind (m/sec)	(dir)	Z/L	u* (m/sec)	T* (C)	Zi (m)	w* (m/sec)	t (min)
05/14-0913	3.0	341	-0.245	0.103	-0.022	120	0.210	10 *
05/14-0933	2.3	171	-0.457	0.077	-0.023	140	0.204	11 *
05/14-0953	3.0	351	-0.115	0.102	-0.015	105	0.183	10 *
05/14-1013	3.1	351	-0.404	0.107	-0.034	95	0.237	7 *
05/14-1051	2.0	173	-0.551	0.067	-0.017	90	0.162	9 *
05/14-1121	2.1	351	-1.586	0.075	-0.064	90	0.258	6
05/14-1151	3.0	241	-0.760	0.106	-0.060	85	0.277	5 *
05/14-1224	2.5	241	-0.946	0.086	-0.049	180	0.311	10
05/14-1300	1.9	240	-1.660	0.067	-0.051	280	0.339	14
05/14-1330	2.2	242	-1.071	0.075	-0.040	300	0.334	15
05/14-1400	2.3	240	-0.681	0.078	-0.026	310	0.302	17
05/14-1430	4.5	61	-0.194	0.163	-0.033	310	0.415	12
05/14-1500	3.3	61	-0.202	0.134	-0.023	310	0.345	15
05/14-1530	2.1	240	-0.672	0.071	-0.021	310	0.273	19
05/14-1600	2.5	233	-0.033	0.080	0.004	320	0.142	38 *
05/14-1636	2.5	239	0.312	0.083	0.022	300	0.251	20 *
05/14-1730	2.7	242	0.119	0.083	0.012	220	0.167	22
05/14-1800	2.4	239	0.394	0.058	0.015	200	0.173	19
05/14-1830	2.5	241	0.054	0.091	0.010	100	0.112	15
05/14-1930	4.6	241	-0.050	0.160	-0.004	160	0.205	13
05/14-2000	4.4	60	-0.075	0.152	-0.008	140	0.215	11
05/14-2030	1.6	61	-0.032	0.161	-0.001	125	0.151	13
05/14-2120	4.5	241	-0.049	0.155	-0.003	135	0.154	12
05/14-2150	6.9	241	-0.004	0.256	0.001	140	0.166	14
05/14-2240	8.2	241	-0.001	0.308	0.004	130	0.059	44
05/14-2310	8.1	242	-0.002	0.305	0.005	175	0.335	34
05/15-0002	7.5	240	-0.009	0.279	0.001	260	0.223	19
05/15-0551	10.9	235	-0.011	0.425	-0.002	300	0.399	13
05/15-0721	10.5	107	-0.011	0.408	-0.001	300	0.332	13
05/15-0751	9.5	235	-0.007	0.363	0.007	300	0.273	18
05/15-0335	10.4	244	0.001	0.393	0.010	300	0.217	23
05/15-0909	11.0	243	0.001	0.424	0.011	300	0.247	20
05/15-0939	12.0	237	-0.019	0.471	-0.022	300	0.545	9
05/15-1003	11.7	235	-0.013	0.459	-0.012	300	0.461	11
05/15-1116	10.8	235	-0.010	0.420	-0.002	300	0.377	13

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Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (C)	Zi (m)	w* (m/sec)	t (min)
05/15-1145	12.2	145	-0.018	0.480	-0.015	300	0.541	9
05/15-1215	11.7	324	-0.024	0.457	-0.025	300	0.569	9
05/15-1246	12.5	146	-0.022	0.493	-0.028	300	0.597	6
05/15-1315	10.9	145	-0.015	0.422	-0.022	300	0.454	11
05/15-1343	13.9	325	-0.020	0.553	-0.035	300	0.651	8
05/15-1440	13.1	325	-0.023	0.519	-0.033	300	0.642	8
05/15-1520	13.3	146	-0.021	0.553	-0.029	300	0.661	8
05/15-1550	14.2	100	-0.018	0.566	-0.022	335	0.654	8
05/15-1620	15.2	101	-0.016	0.612	-0.023	350	0.697	8
05/15-1700	15.4	101	-0.017	0.621	-0.026	360	0.735	8
05/15-1730	15.7	101	-0.018	0.637	-0.031	380	0.740	8
05/15-1855	16.4	281	-0.021	0.669	-0.045	400	0.875	8
05/15-1925	17.8	281	-0.013	0.733	-0.031	340	0.780	7
05/18-1459	3.2	26	-0.770	0.095	-0.021	50	0.205	4
05/18-1600	5.7	204	-0.308	0.137	-0.015	60	0.230	4
05/18-1700	5.2	194	-0.136	0.239	-0.041	60	0.312	3 *
05/18-1730	5.3	194	-0.088	0.278	-0.035	60	0.312	3 *
05/18-1800	3.5	197	-0.109	0.250	-0.037	50	0.235	3 *
05/18-1820	5.3	66	-0.059	0.212	-0.009	50	0.195	4
05/18-1900	9.9	15	-0.140	0.192	-0.025	80	0.277	5 *
05/18-1948	3.8	56	-0.341	0.136	-0.040	95	0.281	6 *
05/18-2013	3.1	243	-0.654	0.109	-0.052	115	0.306	6
05/18-2049	3.1	323	-0.437	0.107	-0.035	105	0.250	7
05/18-2218	6.5	309	-0.019	0.499	-0.032	50	0.319	3
05/19-1057	4.4	66	-0.154	0.322	-0.119	200	0.650	5
05/19-1200	5.0	291	-0.449	0.190	-0.118	210	0.565	6
05/19-1230	5.2	291	-0.403	0.197	-0.114	190	0.548	6
05/19-1300	5.7	291	-0.324	0.216	-0.109	170	0.537	5
05/19-1330	5.5	289	-0.353	0.208	-0.110	185	0.547	5
05/19-1400	5.5	293	-0.347	0.208	-0.109	190	0.551	6
05/19-1430	5.6	292	-0.320	0.210	-0.102	200	0.550	6
05/19-1500	5.8	111	-0.302	0.218	-0.103	200	0.560	6
05/19-1530	5.9	111	-0.285	0.224	-0.103	180	0.545	6
05/19-1600	6.3	111	-0.253	0.239	-0.104	200	0.579	6
05/19-1630	7.0	111	-0.193	0.272	-0.104	210	0.612	6

CEWCOM-78

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
05/19-1700	7.8	293	-0.156	0.304	-0.104	220	0.645	6
05/19-1730	7.8	290	-0.155	0.307	-0.106	240	0.671	6
05/19-1800	7.4	291	-0.182	0.290	-0.111	250	0.677	6
05/19-1830	7.4	290	-0.202	0.288	-0.123	230	0.678	6
05/19-1930	7.5	289	-0.199	0.296	-0.129	220	0.683	5
05/19-2000	8.1	289	-0.177	0.318	-0.133	260	0.747	6
05/19-2030	8.3	293	-0.172	0.330	-0.139	250	0.756	6
05/19-2100	7.5	290	-0.205	0.294	-0.132	280	0.743	6
05/19-2130	7.3	111	-0.222	0.286	-0.136	230	0.696	6
05/19-2200	7.5	293	-0.216	0.295	-0.140	230	0.709	5
05/19-2230	7.5	291	-0.209	0.294	-0.135	220	0.690	5
05/19-2300	7.3	291	-0.222	0.287	-0.137	240	0.703	6
05/19-2330	7.1	292	-0.251	0.278	-0.145	240	0.714	6
05/20-0130	6.1	289	-0.347	0.237	-0.116	330	0.753	7
05/20-0200	6.7	110	-0.309	0.259	-0.155	310	0.777	7
05/20-0230	5.8	111	-0.398	0.224	-0.149	360	0.767	8
05/20-0300	6.2	289	-0.337	0.240	-0.146	340	0.765	7
05/20-0330	6.3	290	-0.336	0.242	-0.147	370	0.791	8
05/20-0400	6.6	293	-0.286	0.256	-0.140	360	0.787	8
05/20-0430	6.9	291	-0.261	0.269	-0.141	350	0.794	7
05/20-0500	6.4	270	-0.295	0.249	-0.136	360	0.772	8
05/20-0530	6.3	269	-0.302	0.244	-0.134	370	0.770	8
05/20-0600	6.9	271	-0.230	0.267	-0.122	420	0.803	9
05/20-0630	6.6	271	-0.248	0.256	-0.121	420	0.790	9
05/20-0700	7.3	91	-0.197	0.285	-0.119	420	0.814	9
05/20-0730	7.6	270	-0.186	0.297	-0.122	460	0.857	9
05/20-0800	7.6	272	-0.180	0.296	-0.117	420	0.819	9
05/20-0930	8.5	116	-0.199	0.308	-0.138	430	0.888	8
05/20-1100	14.0	131	-0.139	0.339	-0.114	440	0.874	8
05/20-1130	11.5	307	-0.139	0.306	-0.092	420	0.777	9
05/20-1200	8.6	306	-0.120	0.319	-0.086	420	0.770	9
05/20-1230	8.9	306	-0.105	0.317	-0.072	440	0.742	10
05/20-1300	9.3	304	-0.069	0.335	-0.057	430	0.677	11
05/20-1330	8.8	305	-0.051	0.341	-0.036	415	0.612	11
05/20-1400	8.9	127	-0.071	0.327	-0.048	400	0.650	10

CENCOM-78

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
05/20-1455	9.7	307	-0.064	0.344	-0.046	450	0.685	11
05/20-1530	9.8	125	-0.067	0.343	-0.048	420	0.677	10
05/20-1600	8.8	305	-0.065	0.342	-0.046	450	0.685	11
05/20-1630	9.6	308	-0.063	0.335	-0.047	420	0.667	10
05/20-1700	9.9	306	-0.068	0.370	-0.060	450	0.752	10
05/20-1730	10.5	126	-0.069	0.377	-0.064	430	0.760	9
05/20-1800	10.7	126	-0.066	0.391	-0.067	440	0.783	9
05/20-1830	11.1	304	-0.060	0.433	-0.076	420	0.828	8
05/20-1900	11.2	304	-0.059	0.433	-0.075	420	0.824	8
05/20-1954	11.1	303	-0.067	0.375	-0.064	360	0.706	9
05/20-2030	12.1	121	-0.046	0.428	-0.057	360	0.712	8
05/20-2100	12.1	303	-0.044	0.417	-0.052	360	0.684	9
05/20-2130	11.8	121	-0.038	0.419	-0.045	380	0.655	10
05/20-2200	11.7	303	-0.038	0.400	-0.040	400	0.647	10
05/20-2230	11.5	120	-0.032	0.387	-0.031	380	0.580	11
05/20-2300	10.0	301	-0.039	0.373	-0.034	410	0.610	11
05/20-2330	10.4	301	-0.041	0.386	-0.040	380	0.627	10
05/21-0000	11.5	121	-0.039	0.398	-0.041	420	0.661	11
05/21-0130	11.0	121	-0.045	0.380	-0.043	500	0.698	12
05/21-0200	9.5	301	-0.050	0.364	-0.044	520	0.703	12
05/21-0300	9.2	301	-0.053	0.334	-0.043	530	0.681	13
05/21-0330	10.2	120	-0.057	0.333	-0.043	580	0.708	14
05/21-0356	10.2	303	-0.059	0.334	-0.041	590	0.708	14
05/21-0430	10.4	121	-0.050	0.358	-0.040	600	0.722	14
05/21-0458	9.7	301	-0.048	0.366	-0.039	500	0.728	14
05/21-0530	10.0	116	-0.053	0.325	-0.036	620	0.695	15
05/21-0558	10.4	298	-0.050	0.336	-0.031	660	0.696	16
05/21-0630	9.3	116	-0.055	0.315	-0.030	700	0.690	17
05/21-0653	8.0	294	-0.071	0.276	-0.029	710	0.560	18
05/21-1600	6.4	351	-0.106	0.240	-0.029	320	0.501	11 *
05/21-1630	3.3	294	-0.057	0.312	-0.025	140	0.401	6
05/21-2100	12.5	198	-0.062	0.438	-0.076	430	0.854	3 *
05/21-2130	5.8	196	-0.062	0.356	-0.046	460	0.705	11 *
05/21-2200	3.9	194	-0.081	0.300	-0.043	520	0.676	13 *
05/21-2230	11.3	121	-0.040	0.376	-0.031	600	0.704	14

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CEWCOM-78

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
05/21-2300	11.7	120	-0.031	0.377	-0.021	600	0.643	16
05/21-2330	12.2	302	-0.027	0.416	-0.022	640	0.690	15 *
05/22-0000	11.3	302	-0.033	0.418	-0.030	600	0.729	14 *
05/22-0030	12.3	120	-0.039	0.408	-0.035	580	0.743	13
05/22-0100	11.7	121	-0.043	0.400	-0.039	570	0.754	13 *
05/22-0130	11.8	303	-0.044	0.386	-0.038	560	0.730	13 *
05/22-0152	10.6	1	-0.078	0.418	-0.038	540	0.926	10
05/22-0230	12.0	131	-0.040	0.398	-0.035	540	0.718	13
05/22-0300	13.4	130	-0.035	0.433	-0.036	580	0.764	13 *
05/22-0330	10.8	309	-0.034	0.421	-0.031	590	0.738	13 *
05/22-0400	10.8	304	-0.032	0.423	-0.029	650	0.750	14 *
05/22-0430	12.3	308	-0.037	0.387	-0.029	700	0.739	16
05/22-0500	10.3	304	-0.043	0.380	-0.035	700	0.768	15
05/22-0530	10.9	299	-0.039	0.407	-0.037	700	0.795	15
05/22-0600	11.4	120	-0.047	0.374	-0.038	720	0.784	15
05/22-0630	11.0	300	-0.041	0.430	-0.042	780	0.830	15
05/22-0700	10.7	302	-0.046	0.372	-0.034	800	0.802	17
05/22-0730	9.9	302	-0.047	0.348	-0.023	860	0.772	19
05/22-0800	11.7	303	-0.040	0.385	-0.030	860	0.806	18
05/22-0830	10.0	299	-0.044	0.370	-0.030	860	0.799	18
05/22-1130	10.1	301	-0.056	0.366	-0.044	920	0.881	17
05/22-1300	16.2	12	-0.037	0.434	-0.040	630	0.827	14 *
05/22-1330	17.8	191	-0.031	0.447	-0.032	600	0.763	13 *
05/22-1400	15.3	2	-0.034	0.395	-0.026	550	0.679	13 *
05/22-1430	12.5	2	-0.047	0.353	-0.030	500	0.654	13 *
05/22-1500	14.4	2	-0.042	0.418	-0.042	350	0.666	9 *
05/22-1600	13.6	359	-0.024	0.519	-0.034	250	0.609	7 *
05/22-1630	11.6	359	-0.017	0.455	-0.010	275	0.455	9 *
05/22-1850	12.1	271	-0.023	0.476	-0.013	300	0.577	9
05/22-2055	6.7	274	-0.105	0.250	-0.026	160	0.410	6
05/23-0004	5.6	277	-0.639	0.153	-0.039	80	0.362	4
05/23-0103	6.7	97	-0.287	0.224	-0.035	50	0.354	2 *
05/23-0230	5.2	96	-1.020	0.130	-0.106	140	0.442	5
05/23-0300	6.4	274	-0.299	0.231	-0.009	80	0.433	3
05/23-0330	9.6	96	-0.183	0.311	-0.113	50	0.423	2

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Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
05/23-0500	4.1	302	-3.631	0.072	-0.116	180	0.405	7
05/23-0524	4.0	307	-1.971	0.099	-0.120	130	0.454	7
05/23-0543	4.3	302	-1.949	0.108	-0.149	225	0.536	7
05/23-0627	1.5	299	-1.090	0.052	-0.024	200	0.205	10 *
05/23-0645	3.1	290	-1.429	0.120	-0.126	200	0.514	6
05/23-0700	1.3	291	-8.048	0.053	-0.139	200	0.405	8
05/23-0725	2.1	271	-3.966	0.073	-0.130	280	0.493	9
05/23-0810	11.1	269	-0.087	0.432	-0.092	255	0.785	5
05/23-1048	13.1	96	-0.036	0.544	-0.049	50	0.426	2 *
05/23-1130	11.3	275	-0.043	0.444	-0.032	140	0.516	5
05/23-1200	14.6	277	-0.013	0.540	0.001	160	0.435	6
05/23-1230	12.9	274	-0.032	0.485	-0.030	60	0.388	3
05/23-1300	12.1	96	-0.033	0.439	-0.023	70	0.371	3 *
05/23-1330	14.3	95	-0.017	0.436	-0.002	80	0.336	4
05/23-1400	13.5	95	-0.015	0.451	0.005	50	0.251	3
05/23-1430	11.7	274	0.001	0.427	0.027	50	0.151	6

TABLE 3-42

Date/Time	Wind (m/sec)	(Dir)	Z/L	U* (m/sec)	T* (C)	Zi (m)	W* (m/sec)	t (min)	
07/31-1135	1.6	293	-4.436	0.058	-0.073	230	0.406	11	
07/31-1205	3.0	239	-2.177	0.104	-0.141	240	0.542	7	
07/31-1223	6.6	294	-0.270	0.234	-0.056	140	0.508	5	
07/31-1323	8.2	300	-0.098	0.295	-0.007	120	0.421	5	
07/31-1353	8.5	305	-0.108	0.307	-0.013	200	0.541	6	
07/31-1423	8.0	313	-0.105	0.287	-0.005	230	0.520	7	
07/31-1527	7.4	292	-0.160	0.265	-0.025	240	0.536	7	
07/31-1557	6.5	287	-0.299	0.232	-0.060	240	0.619	6	
07/31-1627	5.9	270	-0.399	0.207	-0.067	220	0.590	6	
07/31-1657	5.5	274	-0.418	0.193	-0.056	240	0.574	7	
07/31-1727	4.7	267	-0.775	0.162	-0.091	220	0.575	5	
07/31-1757	3.4	258	-1.611	0.117	-0.101	220	0.533	7	*
07/31-1827	2.3	245	-2.400	0.098	-0.105	200	0.492	7	*
07/31-1902	3.0	232	-2.459	0.103	-0.125	180	0.504	6	*
07/31-1934	4.6	240	-0.767	0.161	-0.081	160	0.514	5	
07/31-2004	4.3	264	-0.669	0.147	-0.042	100	0.380	4	
07/31-2034	4.3	275	-0.661	0.143	-0.043	240	0.511	3	
07/31-2104	4.0	263	-0.758	0.135	-0.038	240	0.487	6	
07/31-2130	3.3	270	-0.517	0.107	0.019	260	0.336	13	
07/31-2201	2.9	270	-0.574	0.093	0.027	300	0.312	16	
07/31-2231	3.6	277	-0.450	0.117	0.020	320	0.374	14	
07/31-2301	4.0	239	-0.382	0.132	0.017	320	0.401	13	*
07/31-2331	5.2	301	-0.220	0.177	0.015	320	0.451	12	*
08/01-0050	5.0	307	-0.275	0.171	0.007	340	0.482	12	
08/01-0120	5.9	298	-0.212	0.202	0.002	340	0.526	11	
08/01-0150	5.3	300	-0.233	0.201	-0.005	340	0.545	10	
08/01-0220	6.2	307	-0.211	0.217	-0.008	340	0.536	10	
08/01-0250	6.5	301	-0.186	0.228	-0.007	350	0.533	10	
08/01-0337	5.9	306	-0.267	0.205	-0.013	360	0.594	10	*
08/01-0407	6.1	302	-0.250	0.212	-0.019	360	0.601	10	*
08/01-0437	6.3	303	-0.246	0.219	-0.025	360	0.620	10	*
08/01-0507	6.9	308	-0.167	0.241	-0.011	350	0.590	10	*
08/01-0537	6.7	311	-0.161	0.235	-0.007	340	0.551	10	*
08/01-0607	6.1	314	-0.235	0.212	-0.020	200	0.485	7	*
08/01-0637	3.3	356	-0.867	0.129	-0.049	220	0.474	8	

HABLES-WC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/01-0707	2.8	31	-1.487	0.095	-0.040	240	0.431	9
08/01-0737	2.8	96	-0.736	0.090	0.015	280	0.325	14 *
08/01-0819	5.2	112	-0.142	0.174	0.025	300	0.364	14
08/01-0849	4.2	103	-0.303	0.136	0.015	320	0.385	14
08/01-0919	3.3	85	-0.965	0.111	-0.029	340	0.487	12 *
08/01-0949	1.6	56	-4.998	0.060	-0.063	370	0.471	13
08/01-1023	1.6	271	-4.637	0.058	-0.051	360	0.441	14
08/01-1053	3.8	232	-0.898	0.131	-0.056	380	0.586	11 *
08/01-1123	4.8	198	-0.519	0.164	-0.046	390	0.615	11
08/01-1153	4.1	201	-0.619	0.138	-0.027	400	0.551	12
08/01-1246	3.7	200	-0.820	0.124	-0.029	420	0.551	13
08/01-1316	3.1	212	-1.282	0.103	-0.034	450	0.543	14
08/01-1352	3.8	218	-0.834	0.127	-0.035	470	0.590	13
08/01-1422	3.7	204	-0.866	0.125	-0.036	430	0.595	13
08/01-1451	3.4	206	-0.987	0.116	-0.033	500	0.583	14
08/01-1503	3.1	208	-1.183	0.105	-0.031	460	0.545	14
08/01-1540	2.8	236	-1.678	0.094	-0.042	500	0.563	15 *
08/01-1600	3.3	236	-1.005	0.109	-0.023	440	0.525	14 *
08/01-1632	4.7	249	-0.356	0.160	-0.004	430	0.537	13 *
08/01-1659	4.4	220	-0.322	0.146	0.011	340	0.433	13 *
08/01-1730	4.7	231	-0.268	0.159	0.010	300	0.425	12 *
08/01-1826	4.3	240	-0.443	0.146	-0.011	340	0.490	12 *
08/01-1903	2.8	234	-1.293	0.092	-0.019	340	0.441	13 *
08/01-1941	2.0	221	-3.506	0.071	-0.065	360	0.491	12
08/01-2040	1.1	283	-12.245	0.045	-0.113	380	0.487	13
08/01-2130	1.4	170	-8.150	0.053	-0.104	360	0.493	12
08/01-2200	2.1	222	-3.807	0.075	-0.093	355	0.531	11
08/01-2241	2.8	229	-2.192	0.097	-0.091	380	0.584	11
08/01-2311	2.9	222	-2.192	0.098	-0.094	390	0.597	11
08/01-2341	2.8	216	-2.539	0.096	-0.110	400	0.620	11
08/02-0036	3.0	178	-2.102	0.105	-0.108	400	0.637	10
08/02-0106	3.2	180	-1.890	0.111	-0.109	400	0.652	10
08/02-0136	4.0	195	-1.147	0.137	-0.099	400	0.681	10
08/02-0206	3.1	197	-1.853	0.108	-0.097	400	0.628	11
08/02-0236	2.5	192	-3.281	0.085	-0.112	400	0.601	11

MABLES-WC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)	
08/02-0306	2.9	195	-2.463	0.099	-0.118	400	0.638	10	
08/02-0348	2.9	215	-2.057	0.097	-0.115	400	0.593	11	*
08/02-0437	4.1	187	-0.989	0.142	-0.120	400	0.679	10	*
08/02-0507	4.4	194	-0.784	0.151	-0.105	410	0.673	10	*
08/02-0537	5.6	189	-0.487	0.198	-0.084	420	0.752	9	*
08/02-0607	6.7	181	-0.315	0.241	-0.079	420	0.790	9	*
08/02-0630	5.7	197	-0.463	0.201	-0.081	420	0.750	9	*
08/02-0705	5.1	209	-0.655	0.181	-0.101	430	0.766	9	*
08/02-0753	3.5	198	-1.823	0.123	-0.140	435	0.734	10	
08/02-0835	4.5	174	-0.874	0.156	-0.097	440	0.732	10	
08/02-0905	5.4	186	-0.507	0.191	-0.079	450	0.749	10	
08/02-0935	6.2	193	-0.319	0.219	-0.059	460	0.741	10	
08/02-1005	5.3	184	-0.367	0.183	-0.036	470	0.648	12	
08/02-1023	4.8	200	-0.522	0.165	-0.049	470	0.560	12	
08/02-1052	5.0	206	-0.477	0.172	-0.049	470	0.669	12	
08/02-1130	3.3	224	-1.664	0.115	-0.104	470	0.684	11	
08/02-1203	2.3	209	-3.601	0.080	-0.105	470	0.615	13	
08/02-1229	1.6	233	-5.586	0.060	-0.079	470	0.534	15	
08/02-1310	3.6	281	-1.172	0.121	-0.063	480	0.640	12	
08/02-1340	3.9	303	-1.010	0.133	-0.067	480	0.667	12	
08/02-1430	3.8	286	-1.022	0.128	-0.060	430	0.647	12	
08/02-1607	4.6	238	-0.620	0.157	-0.050	480	0.672	12	
08/02-1701	6.1	320	-0.329	0.215	-0.051	460	0.733	10	*
08/02-1721	4.5	282	-0.701	0.156	-0.062	440	0.673	11	*
08/02-1755	5.2	286	-0.537	0.182	-0.070	440	0.721	10	*
08/02-1837	5.5	278	-0.513	0.195	-0.087	360	0.716	8	*
08/02-1907	4.3	293	-0.780	0.166	-0.103	400	0.723	9	*
08/02-1937	3.4	305	-1.419	0.117	-0.084	400	0.620	11	
08/02-2000	3.2	289	-1.417	0.108	-0.063	400	0.572	12	
08/02-2030	1.7	294	-5.185	0.063	-0.087	400	0.514	13	
08/02-2101	2.6	251	-2.533	0.090	-0.093	400	0.584	11	*
08/02-2137	3.4	294	-1.352	0.118	-0.133	360	0.566	9	
08/02-2156	1.2	310	-13.185	0.048	-0.163	480	0.530	14	
08/02-2243	1.7	307	-6.736	0.062	-0.130	400	0.553	12	
08/02-2313	1.9	312	-4.577	0.069	-0.103	360	0.528	11	

TABLE3-12

Date/Time	Wind (m/sec)	(dir)	Z/L	u* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)	
08/02-2343	2.2	296	-3.373	0.078	-0.091	330	0.543	12	
08/02-2359	2.3	290	-2.127	0.097	-0.089	390	0.536	11	*
08/03-0059	3.5	292	-1.591	0.125	-0.126	410	0.700	10	*
08/03-0130	3.1	293	-2.098	0.107	-0.119	420	0.661	11	*
08/03-0200	2.8	304	-2.195	0.097	-0.092	440	0.614	12	*
08/03-0229	2.8	270	-2.340	0.096	-0.098	440	0.621	12	*
08/03-0300	2.0	305	-4.912	0.071	-0.117	440	0.589	12	
08/03-0326	1.4	309	-8.337	0.055	-0.119	460	0.555	14	
08/03-0402	1.5	278	-6.980	0.058	-0.108	420	0.536	13	
08/03-0429	2.5	248	-3.274	0.085	-0.114	420	0.612	11	*
08/03-0459	1.7	248	-5.447	0.063	-0.096	450	0.547	14	
08/03-0530	2.0	226	-3.776	0.070	-0.074	460	0.538	14	
08/03-0600	1.7	222	-4.543	0.061	-0.062	460	0.499	15	
08/03-0630	1.1	210	-8.650	0.043	-0.049	460	0.432	18	
08/03-0700	1.5	196	-5.111	0.055	-0.049	450	0.462	16	
08/03-0723	1.7	203	-4.003	0.061	-0.046	460	0.476	16	
08/03-0758	1.4	200	-5.169	0.054	-0.066	460	0.488	16	
08/03-0830	1.7	143	-5.093	0.052	-0.109	460	0.565	14	
08/03-1030	2.0	154	-3.717	0.071	-0.071	420	0.524	13	
08/03-1050	2.6	165	-2.015	0.089	-0.055	420	0.541	13	
08/03-1125	2.0	153	-1.749	0.099	-0.053	400	0.563	12	
08/03-1155	3.6	169	-1.143	0.123	-0.071	400	0.617	11	
08/03-1230	3.5	149	-1.333	0.124	-0.059	330	0.536	10	
08/03-1300	2.9	141	-1.555	0.099	-0.048	340	0.511	11	
08/03-1330	2.5	131	-2.233	0.085	-0.053	350	0.502	12	
08/03-1355	2.0	234	-4.021	0.070	-0.076	330	0.495	11	
08/03-1449	3.3	235	-1.388	0.111	-0.053	340	0.542	10	
08/03-1521	2.9	233	-1.378	0.097	-0.029	350	0.433	12	
08/03-1532	2.4	233	-3.139	0.031	-0.032	340	0.532	11	*
08/03-1630	5.3	225	-0.450	0.166	-0.056	230	0.55[illegible]	8	*
08/03-1900	4.3	221	-0.796	0.150	-0.069	300	0.545	10	*
08/03-2045	10.4	230	-0.140	0.405	-0.111	240	0.342	5	
08/03-2106	7.2	243	-0.317	0.261	-1.106	290	0.758	6	
08/03-2157	2.5	175	-2.253	0.094	-0.030	250	0.505	9	*
08/03-2227	2.0	274	-3.553	0.071	-0.058	220	0.421	9	*

TABLE3-JC

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/03-2257	1.4	256	-5.332	0.054	-0.055	250	0.404	10 *
08/03-2327	3.7	270	-0.971	0.126	-0.049	330	0.549	10 *
08/03-2357	4.5	264	-0.677	0.154	-0.057	390	0.632	10 *
08/04-0027	3.9	254	-1.089	0.133	-0.080	320	0.599	9 *
08/04-0057	4.0	269	-1.130	0.137	-0.096	160	0.499	5 *
08/04-0127	3.3	253	-1.619	0.113	-0.089	130	0.431	6 *
08/04-0157	2.6	257	-2.757	0.088	-0.093	150	0.422	6 *
08/04-0227	3.2	258	-1.620	0.111	-0.083	200	0.489	7 *
08/04-0257	3.5	260	-1.237	0.125	-0.081	240	0.537	7 *
08/04-0327	2.9	266	-1.319	0.100	-0.057	200	0.456	7 *
08/04-0357	2.4	247	-3.261	0.081	-0.093	240	0.481	8 *
08/04-0427	3.3	265	-1.565	0.115	-0.090	200	0.501	7 *
08/04-0457	2.5	230	-3.043	0.085	-0.095	100	0.366	5 *
08/04-0527	2.1	227	-4.464	0.073	-0.109	200	0.453	7 *
08/04-0557	1.4	256	-8.698	0.054	-0.115	200	0.417	8 *
08/04-0627	1.7	221	-5.913	0.064	-0.112	220	0.452	8 *
08/04-0657	1.3	184	-5.633	0.066	-0.112	300	0.505	10 *
08/04-0738	2.1	175	-4.186	0.074	-0.104	310	0.522	10 *
08/04-0759	1.2	234	-10.097	0.049	-0.107	400	0.503	13 *
08/04-0859	2.1	162	-4.076	0.076	-0.105	140	0.403	6
08/04-0929	1.3	157	-9.210	0.050	-0.103	160	0.368	7
08/04-0959	1.7	284	-4.755	0.063	-0.078	220	0.413	9
08/04-1037	3.3	300	-1.119	0.113	-0.046	360	0.532	11 *
08/04-1107	2.7	307	-2.032	0.090	-0.060	380	0.528	12 *
08/04-1151	4.0	308	-0.789	0.136	-0.048	430	0.606	12 *
08/04-1230	5.6	301	-0.425	0.199	-0.063	340	0.667	8 *
08/04-1255	4.7	320	-0.501	0.162	-0.035	380	0.594	11 *
08/04-1331	5.8	328	-0.280	0.201	-0.022	320	0.569	9
08/04-1359	6.3	315	-0.246	0.221	-0.027	350	0.618	9 *
08/04-1429	6.6	315	-0.219	0.231	-0.024	330	0.611	9 *
08/04-1500	7.7	321	-0.194	0.279	-0.043	300	0.690	7 *
08/04-1530	9.5	330	-0.126	0.366	-0.052	320	0.803	7
08/04-1601	9.9	324	-0.119	0.381	-0.065	340	0.837	7
08/04-1631	9.6	323	-0.123	0.370	-0.053	320	0.818	7
08/04-1701	9.4	327	-0.127	0.362	-0.061	330	0.806	7

MABLES-WC

Date/Time	Wind (m/sec)	(Dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/04-1930	7.3	294	-0.258	0.262	-0.068	320	0.731	7 *
08/04-2000	9.0	316	-0.140	0.347	-0.062	310	0.781	7
08/04-2026	8.9	313	-0.124	0.342	-0.043	260	0.693	6
08/04-2048	8.7	315	-0.104	0.331	-0.021	270	0.638	7
08/05-0242	8.1	322	-0.169	0.295	-0.042	230	0.680	7
08/05-0312	8.5	316	-0.150	0.311	-0.041	250	0.664	6
08/05-0342	9.1	322	-0.122	0.347	-0.043	370	0.736	8
08/05-0353	9.5	327	-0.111	0.363	-0.043	310	0.754	7
08/05-0435	9.4	332	-0.084	0.356	-0.045	255	0.636	7
08/05-0505	9.2	331	-0.093	0.349	-0.050	280	0.654	7
08/05-0535	9.1	321	-0.107	0.348	-0.064	280	0.697	7
08/05-0620	10.2	328	-0.098	0.391	-0.081	295	0.777	6
08/05-0701	10.5	323	-0.093	0.404	-0.083	310	0.802	6
08/05-0731	9.8	313	-0.100	0.378	-0.076	330	0.782	7
08/05-0801	9.9	324	-0.099	0.379	-0.076	340	0.731	7
08/05-0929	8.2	312	-0.177	0.300	-0.088	310	0.737	7
08/05-1001	7.4	327	-0.232	0.265	-0.091	290	0.699	7
08/05-1039	8.0	340	-0.190	0.289	-0.087	300	0.719	7
08/05-1106	6.2	333	-0.341	0.218	-0.089	310	0.668	8 *
08/05-1129	5.5	329	-0.433	0.192	-0.087	320	0.645	8 *
08/05-1155	6.2	324	-0.407	0.220	-0.082	260	0.663	6 *
08/05-1215	6.7	314	-0.323	0.242	-0.076	260	0.630	6 *
08/05-1235	6.8	319	-0.312	0.246	-0.076	260	0.633	6 *
08/05-1300	5.7	313	-0.445	0.203	-0.071	250	0.626	7 *
08/05-1331	6.3	319	-0.393	0.223	-0.081	250	0.662	6 *
08/05-1400	5.5	324	-0.522	0.196	-0.084	190	0.582	5 *
08/05-1430	5.5	329	-0.494	0.196	-0.076	180	0.561	5 *
08/05-1500	3.1	337	-1.543	0.107	-0.052	220	0.476	8 *
08/05-1530	3.2	277	-1.372	0.108	-0.051	210	0.456	8
08/05-1700	2.3	267	-2.630	0.080	-0.055	230	0.433	9
08/05-1830	2.4	265	-2.383	0.081	-0.071	220	0.447	8
08/05-1900	2.1	259	-3.465	0.075	-0.072	230	0.443	9
08/05-1923	2.6	262	-1.353	0.088	-0.073	180	0.392	8
08/05-1956	3.2	274	-1.040	0.107	-0.058	190	0.403	8
08/05-2030	2.9	329	-1.236	0.097	-0.053	210	0.405	9 *

TABLE 8-3C

Date/Time	Wind (m/sec)	(Dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/05-2057	4.0	356	-0.610	0.133	-0.049	190	0.419	8 *
08/05-2127	2.4	327	-1.732	0.078	-0.046	160	0.329	8 *
08/05-2159	2.2	312	-2.032	0.074	-0.049	140	0.312	7
08/05-2229	1.4	231	-4.277	0.050	-0.045	160	0.236	9
08/05-2259	1.4	273	-1.023	0.050	-0.037	165	0.278	10
08/05-2327	1.6	235	-2.502	0.057	-0.022	200	0.237	12 *
08/05-2355	2.2	223	-1.531	0.073	-0.025	260	0.352	12 *
08/06-0001	2.4	224	-1.388	0.077	-0.022	245	0.341	12 *
08/06-0035	3.6	276	-0.933	0.120	-0.029	230	0.457	8
08/06-0105	3.3	236	-0.799	0.132	-0.031	245	0.437	8
08/06-0135	4.2	294	-0.621	0.143	-0.022	210	0.458	8
08/06-0203	3.7	311	-0.883	0.126	-0.031	190	0.441	7
08/06-0237	2.7	330	-1.779	0.092	-0.036	200	0.414	8
08/06-0307	3.5	343	-1.045	0.120	-0.038	200	0.452	7 *
08/06-0337	2.7	333	-1.865	0.092	-0.039	200	0.419	8
08/06-0434	4.3	268	-0.357	0.161	-0.031	180	0.412	7
08/06-0504	5.2	312	-0.300	0.180	-0.034	170	0.426	7
08/06-0534	5.3	327	-0.298	0.183	-0.036	190	0.451	7
08/06-0604	3.8	337	-0.639	0.128	-0.039	190	0.407	8
08/06-0632	4.0	317	-0.583	0.133	-0.038	190	0.410	8
08/06-0652	4.2	308	-0.705	0.144	-0.037	190	0.469	7
08/06-0712	5.4	314	-0.388	0.190	-0.033	195	0.599	6 *
08/06-0732	4.9	322	-0.491	0.169	-0.033	190	0.486	7 *
08/06-0752	5.5	337	-0.372	0.191	-0.031	190	0.592	6 *
08/06-0830	3.8	352	-0.814	0.129	-0.027	200	0.447	7 *
08/06-0859	3.1	330	-1.135	0.105	-0.018	190	0.396	8 *
08/06-0936	5.2	317	-0.323	0.178	-0.007	190	0.435	7
08/06-1006	4.1	313	-0.524	0.137	-0.002	210	0.411	9
08/06-1056	3.2	333	-0.999	0.106	-0.010	300	0.447	11
08/06-1126	2.0	330	-1.532	0.068	-0.013	300	0.332	15
08/06-1156	1.5	291	-3.203	0.053	-0.025	300	0.335	15
08/06-1236	2.4	292	-2.113	0.081	-0.024	310	0.444	12
08/06-1306	4.3	332	-0.687	0.148	-0.038	220	0.502	7 *
08/06-1353	3.7	288	-0.575	0.123	-0.036	190	0.398	8
08/06-1429	3.9	288	-0.600	0.130	-0.034	300	0.468	11

MABLES-WC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
03/05-1454	3.0	286	-1.047	0.101	-0.037	300	0.438	11
03/05-1529	2.2	276	-1.934	0.075	-0.036	310	0.402	13
03/05-1559	3.1	282	-0.975	0.103	-0.036	310	0.443	12
03/05-1631	3.9	300	-0.594	0.131	-0.035	300	0.471	11
03/05-1658	3.7	291	-0.549	0.123	-0.032	300	0.454	11
03/05-1725	3.7	296	-0.609	0.124	-0.030	280	0.439	11
03/05-1756	3.7	301	-0.613	0.123	-0.025	300	0.416	11
03/05-2002	3.2	334	-0.902	0.105	-0.032	260	0.414	10 *
03/05-2002	3.2	334	-0.902	0.105	-0.032	250	0.414	10 *
03/05-2032	2.9	337	-1.008	0.095	-0.026	260	0.388	11 *
03/05-2102	2.7	340	-1.434	0.089	-0.007	250	0.401	10 *
03/06-2132	2.4	332	-2.336	0.079	-0.025	260	0.425	10 *
03/05-2157	2.0	323	-3.251	0.070	-0.030	260	0.418	10
03/05-2223	2.5	303	-2.210	0.084	-0.031	220	0.419	9
03/05-2300	1.8	218	-3.341	0.054	-0.030	260	0.407	11
03/05-2330	1.9	297	-2.603	0.057	-0.041	240	0.364	11
03/07-0000	2.7	292	-1.323	0.089	-0.035	250	0.399	11
03/07-0030	1.8	316	-4.227	0.063	-0.037	240	0.402	10
03/07-0052	2.5	314	-2.235	0.084	-0.033	260	0.445	10
03/07-0114	3.5	313	-0.969	0.117	-0.018	260	0.466	9 *
03/07-0136	3.8	312	-0.853	0.127	-0.023	250	0.437	9 *
03/07-0153	2.1	323	-2.349	0.071	-0.022	230	0.418	11
03/07-0230	1.7	311	-3.780	0.062	-0.019	300	0.406	12
03/07-0300	1.6	357	-4.242	0.059	-0.022	360	0.429	14
03/07-0323	0.9	310	-5.332	0.037	0.021	240	0.266	15
03/07-0500	1.0	106	-6.139	0.038	-0.023	280	0.293	16
03/07-0515	0.9	148	-3.084	0.037	-0.043	390	0.346	19
03/07-0553	1.5	132	-3.017	0.056	-0.036	360	0.371	16
03/07-0623	1.9	175	-2.014	0.062	-0.022	310	0.337	15
03/07-0759	1.5	185	-2.231	0.051	-0.003	290	0.276	18
03/07-0855	1.7	200	-0.976	0.056	0.014	300	0.227	22
03/07-0954	1.2	278	-2.414	0.044	0.007	355	0.261	23
03/07-1025	2.7	292	-0.572	0.085	0.009	355	0.303	19
03/07-1129	3.3	317	-0.998	0.112	-0.014	210	0.419	8
03/07-1159	3.4	321	-0.947	0.114	-0.013	260	0.449	10

MABLES-WC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	Γ* (K)	Zi (m)	w* (m/sec)	t (min)
03/07-1241	2.3	308	-2.527	0.078	-0.032	245	0.423	10
03/07-1301	1.6	315	-4.743	0.059	-0.037	245	0.395	10
03/07-1321	1.9	311	-4.237	0.066	-0.053	230	0.120	9
03/07-1422	6.6	293	-0.332	0.237	-0.093	210	0.652	5
03/07-1442	5.5	303	-0.527	0.196	-0.075	220	0.612	6
03/07-1502	4.4	293	-0.324	0.154	-0.073	230	0.567	7
03/07-1601	4.3	253	-0.305	0.147	-0.056	220	0.526	7 *
03/07-1629	5.5	319	-0.467	0.192	-0.057	220	0.575	6
03/07-1701	5.5	310	-0.484	0.194	-0.064	200	0.565	6
03/07-1731	6.0	307	-0.395	0.213	-0.063	235	0.613	6
03/07-1801	6.0	310	-0.400	0.213	-0.068	230	0.621	6
03/07-1830	6.3	292	-0.299	0.244	-0.064	240	0.650	6
03/07-1852	6.5	296	-0.333	0.230	-0.064	240	0.633	6
03/07-1914	6.2	302	-0.332	0.223	-0.070	260	0.660	7
03/07-1935	5.6	309	-0.463	0.198	-0.066	275	0.649	7
03/07-1955	6.0	315	-0.342	0.210	-0.043	250	0.620	6 *
03/07-2030	6.5	316	-0.204	0.236	-0.052	260	0.639	7 *
03/07-2055	6.8	326	-0.237	0.242	-0.056	250	0.651	7 *
03/07-2120	6.6	315	-0.303	0.235	-0.055	230	0.661	7 *
03/07-2141	7.1	313	-0.151	0.253	-0.023	290	0.511	8
03/07-2200	5.9	312	-0.104	0.242	-0.011	230	0.471	10
03/07-2230	8.0	315	-0.082	0.234	-0.013	260	0.500	9
03/07-2300	8.1	316	-0.070	0.236	-0.005	240	0.461	9
03/07-2320	7.7	311	-0.030	0.270	-0.012	240	0.476	8
03/07-2355	7.4	320	-0.103	0.252	-0.015	240	0.483	8
03/08-0155	11.1	310	-0.059	0.424	-0.040	250	0.555	5
03/08-0225	10.4	305	-0.055	0.399	-0.039	240	0.539	5
03/08-0253	10.3	311	-0.052	0.414	-0.041	220	0.633	6
03/08-0315	10.2	313	-0.071	0.389	-0.042	240	0.542	6
03/08-0400	10.0	315	-0.067	0.383	-0.035	210	0.593	6
03/08-0430	9.1	303	-0.060	0.347	-0.034	240	0.594	7
03/08-0450	4.6	310	-0.059	0.364	-0.030	240	0.592	7
03/08-0530	9.6	310	-0.056	0.364	-0.015	220	0.534	7
03/08-0600	10.1	305	-0.011	0.384	-0.011	220	0.517	7

MABLES-WC

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/08-0630	9.2	308	-0.056	0.347	-0.012	260	0.535	8 *
08/08-0700	9.7	317	-0.071	0.369	-0.004	230	0.628	7 *
08/08-0729	9.5	320	-0.102	0.362	-0.030	320	0.733	7 *
08/08-0758	8.9	319	-0.103	0.339	-0.019	300	0.671	7 *
08/08-0830	9.8	314	-0.091	0.374	-0.026	300	0.714	7 *
08/08-0849	9.7	316	-0.095	0.369	-0.027	320	0.731	7 *
08/08-0901	9.7	324	-0.097	0.370	-0.030	320	0.740	7 *
08/08-0933	9.7	322	-0.103	0.370	-0.036	340	0.769	7 *
08/08-1003	9.3	330	-0.110	0.356	-0.036	340	0.758	7
08/08-1033	9.5	326	-0.076	0.361	-0.035	320	0.670	8
08/08-1103	9.6	332	-0.075	0.365	-0.036	330	0.681	8
08/08-1133	8.9	325	-0.088	0.338	-0.036	380	0.698	9
08/08-1203	7.7	325	-0.137	0.273	-0.037	340	0.529	9
08/08-1231	8.1	330	-0.120	0.293	-0.038	380	0.671	9
08/08-1310	6.3	330	-0.280	0.223	-0.034	340	0.648	9 *
08/08-1330	6.2	333	-0.301	0.218	-0.036	340	0.648	9 *
08/08-1350	6.1	327	-0.345	0.217	-0.049	300	0.650	8 *
08/08-1410	5.5	331	-0.467	0.192	-0.056	300	0.637	8 *
08/08-1430	6.6	322	-0.284	0.235	-0.046	300	0.659	8 *
08/08-1533	5.5	313	-0.304	0.191	-0.012	300	0.542	9 *
08/08-1600	4.3	320	-0.447	0.143	0.003	300	0.456	11 *
08/08-1630	4.6	318	-0.397	0.157	-0.003	300	0.483	10
08/08-1639	5.6	300	-0.214	0.191	0.010	300	0.474	11
08/08-1734	5.4	296	-0.206	0.183	0.017	310	0.451	11
08/08-1801	6.2	294	-0.150	0.215	0.013	310	0.487	11
08/08-1830	6.0	327	-0.102	0.205	0.005	300	0.397	13
08/08-1859	6.9	336	-0.073	0.238	0.003	230	0.390	10
08/08-1930	7.1	316	-0.079	0.247	0.001	190	0.380	8
08/08-2000	6.9	319	-0.090	0.238	-0.001	320	0.457	12
08/08-2130	6.7	314	-0.126	0.235	-0.016	280	0.489	10
08/08-2200	7.0	314	-0.050	0.241	0.013	240	0.335	12
08/08-2230	6.6	304	-0.073	0.227	0.007	230	0.384	12
08/08-2300	6.6	310	-0.081	0.226	0.004	310	0.411	13
08/08-2330	5.5	315	-0.135	0.184	0.001	300	0.395	13
08/09-0000	5.7	324	-0.140	0.193	-0.004	290	0.417	12

TABLES-W2

Date/Time	Wind (m/sec)	(dir)	z/L	u* (m/sec)	T* (K)	zi (m)	w* (m/sec)	t (min)
08/09-0035	6.3	312	-0.230	0.221	-0.015	320	0.585	9
08/09-0105	6.4	315	-0.220	0.226	-0.015	310	0.531	9
08/09-0135	7.2	316	-0.188	0.255	-0.021	360	0.657	9
08/09-0205	6.4	324	-0.232	0.227	-0.037	360	0.674	9 *
08/09-0235	5.1	310	-0.408	0.177	-0.021	340	0.579	10
08/09-0305	4.8	249	-0.394	0.163	-0.003	350	0.531	11
08/09-0330	5.3	342	-0.307	0.182	-0.001	370	0.552	11 *
08/09-0403	5.7	339	-0.152	0.195	-0.002	380	0.472	13
08/09-0429	4.1	318	-0.333	0.137	-0.005	400	0.441	15
08/09-0505	5.5	324	-0.193	0.187	-0.009	310	0.461	11
08/09-0535	5.2	321	-0.239	0.175	-0.014	320	0.476	11
08/09-0605	5.4	336	-0.245	0.183	-0.021	340	0.503	11
08/09-0630	6.6	332	-0.173	0.230	-0.030	320	0.550	10
08/09-0701	7.8	304	-0.132	0.231	-0.041	290	0.655	7 *
08/09-0730	8.6	311	-0.150	0.314	-0.042	260	0.630	6 *
08/09-0755	8.3	317	-0.155	0.302	-0.043	270	0.652	7 *
08/09-0830	8.6	313	-0.149	0.314	-0.040	300	0.709	7 *
08/09-0859	8.0	315	-0.163	0.291	-0.037	300	0.684	7 *
08/09-0925	8.9	315	-0.127	0.342	-0.042	300	0.733	7 *
08/09-1000	9.2	320	-0.113	0.352	-0.041	300	0.733	7
08/09-1015	9.1	317	-0.053	0.347	-0.033	310	0.555	8
08/09-1033	8.8	319	-0.093	0.334	-0.041	330	0.559	6
08/09-1100	8.7	319	-0.094	0.328	-0.040	345	0.572	5
08/09-1142	[illegible]	305	-0.124	0.247	-0.040	350	0.666	5
08/09-1202	8.4	314	-0.112	0.302	-0.047	320	0.637	6
08/09-1227	9.2	317	-0.083	0.350	-0.041	340	0.535	8
08/09-1330	9.1	323	-0.120	0.350	-0.041	310	0.763	7 *
08/09-1355	8.8	325	-0.157	0.302	-0.037	340	0.723	8 *
08/09-1500	6.7	326	-0.141	0.334	-0.043	340	0.771	7 *
08/09-1530	7.4	314	-0.235	0.266	-0.051	360	0.747	8 *
08/09-1554	7.3	330	-0.241	0.251	-0.053	340	0.724	8 *
08/09-1700	6.3	330	-0.245	0.222	-0.054	340	0.623	9
08/09-1730	6.2	326	-0.259	0.218	-0.056	340	0.625	9
08/09-1800	5.8	323	-0.307	0.203	-0.053	360	0.627	10
08/09-1830	5.9	334	-0.301	0.208	-0.061	340	0.627	9

TABLES-NC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	W* (m/sec)	t (min)
08/09-1850	6.1	335	-0.298	0.214	-0.067	340	0.644	9
08/09-1930	5.8	338	-0.438	0.204	-0.067	335	0.689	8 *
08/09-1950	5.8	355	-0.452	0.197	-0.061	320	0.661	8 *
08/09-2010	6.1	357	-0.378	0.217	-0.064	340	0.701	8 *
08/09-2030	5.6	354	-0.437	0.197	-0.057	350	0.675	9 *
08/09-2101	5.5	329	-0.360	0.193	-0.065	360	0.629	10
08/09-2131	5.1	331	-0.435	0.175	-0.063	345	0.598	10
08/09-2201	4.9	332	-0.493	0.169	-0.056	320	0.536	9
08/09-2229	5.5	325	-0.377	0.194	-0.059	330	0.623	9
08/09-2259	6.1	319	-0.319	0.214	-0.075	340	0.659	9
08/09-2332	6.1	316	-0.322	0.215	-0.077	340	0.565	9
08/10-0002	6.6	312	-0.275	0.236	-0.081	320	0.679	8
08/10-0125	5.2	340	-0.640	0.183	-0.092	340	0.706	8 *
08/10-0200	5.3	327	-0.549	0.184	-0.073	340	0.676	8 *
08/10-0353	2.4	334	-3.235	0.081	-0.084	400	0.565	12 *
08/10-0441	2.1	317	-3.181	0.074	-0.093	320	0.479	11
08/10-0501	2.1	316	-3.221	0.074	-0.096	340	0.494	11
08/10-0521	2.4	323	-2.439	0.083	-0.092	350	0.510	11
08/10-0730	3.9	320	-1.067	0.133	-0.072	390	0.634	10
08/10-0800	4.9	324	-0.609	0.171	-0.067	400	0.634	10 *
08/10-0830	5.7	331	-0.477	0.201	-0.079	400	0.743	9 *
08/10-0900	6.2	332	-0.457	0.222	-0.102	410	0.816	8 *
08/10-1000	7.4	331	-0.279	0.266	-0.082	430	0.843	9
08/10-1028	6.7	326	-0.280	0.238	-0.084	460	0.778	10
08/10-1100	5.7	332	-0.407	0.199	-0.085	475	0.743	11
08/10-1230	4.1	329	-0.787	0.141	-0.078	460	0.647	12
08/10-1300	4.2	318	-0.911	0.145	-0.072	450	0.692	11
08/10-1320	4.3	322	-0.880	0.150	-0.077	420	0.692	10 *
08/10-1340	5.0	325	-0.663	0.174	-0.079	440	0.739	10 *
08/10-1400	4.9	323	-0.656	0.172	-0.076	460	0.743	10 *
08/10-1426	5.4	321	-0.501	0.190	-0.065	460	0.746	10 *
08/10-1446	5.6	327	-0.463	0.197	-0.064	440	0.742	10 *
08/10-1505	6.0	330	-0.387	0.212	-0.059	400	0.726	9 *
08/10-1525	6.3	331	-0.303	0.221	-0.041	390	0.692	9 *
08/10-1536	6.9	317	-0.226	0.247	-0.033	340	0.657	8

TABLES-4C

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)	
08/10-1634	6.4	313	-0.291	0.228	-0.041	300	0.643	8	
08/10-1704	6.4	309	-0.211	0.225	-0.040	260	0.543	8	
08/10-1734	7.0	323	-0.162	0.246	-0.034	240	0.532	8	
08/10-1804	8.0	321	-0.110	0.235	-0.027	300	0.583	9	
08/10-2030	8.0	330	-0.115	0.235	0.002	290	0.574	8	
08/10-2102	8.2	331	-0.047	0.291	0.011	230	0.421	11	
08/10-2132	8.5	332	-0.044	0.302	0.003	200	0.363	9	
08/10-2158	8.5	334	-0.064	0.303	-0.005	260	0.439	9	
08/10-2230	8.5	342	-0.082	0.305	-0.020	300	0.563	9	
08/10-2300	8.5	316	-0.083	0.307	-0.022	280	0.559	6	
08/10-2330	9.0	326	-0.067	0.340	-0.023	200	0.516	6	
08/10-2358	8.5	321	-0.078	0.306	-0.018	180	0.469	6	
08/11-0031	9.2	330	-0.094	0.348	-0.014	110	0.478	4	*
08/11-0058	9.6	332	-0.082	0.366	-0.011	140	0.521	4	*
08/11-0130	9.0	325	-0.093	0.341	-0.009	200	0.568	6	*
08/11-0200	7.0	326	-0.177	0.248	-0.003	270	0.565	8	*
08/11-0230	7.3	322	-0.147	0.260	0.000	140	0.446	5	*
08/11-0255	5.3	321	-0.313	0.184	-0.003				*
08/11-0400	7.5	319	-0.135	0.265	0.003	250	0.544	8	
08/11-0430	7.5	318	-0.053	0.260	0.013	200	0.348	10	
08/11-0500	7.5	324	-0.047	0.259	0.016	240	0.350	11	
08/11-0530	6.4	325	-0.081	0.220	0.011	250	0.367	11	
08/11-0600	6.4	332	-0.083	0.220	0.010	250	0.376	12	
08/11-1555	5.7	313	-0.156	0.237	0.005	230	0.530	9	
08/11-1640	8.0	310	-0.059	0.282	0.002	240	0.450	9	
08/11-1726	8.2	311	-0.062	0.291	0.004	280	0.467	10	
08/11-1756	8.3	308	-0.061	0.330	-0.008	260	0.523	6	
08/11-1857	8.5	311	-0.085	0.310	-0.020	230	0.530	7	
08/11-1930	7.9	293	-0.094	0.282	-0.015	300	0.541	9	
08/11-2000	8.2	303	-0.074	0.290	-0.005	260	0.469	9	
08/11-2130	6.7	304	-0.062	0.228	0.016	190	0.313	10	
08/11-2200	7.4	305	-0.050	0.253	0.015				
08/11-2229	7.6	312	-0.047	0.264	0.015	200	0.337	10	
08/11-2253	8.6	317	-0.040	0.321	0.003	300	0.455	11	
08/12-0000	7.9	305	-0.062	0.278	0.004	200	0.399	8	

MABLES-WC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	W* (m/sec)	t (min)
08/12-0025	6.6	324	-0.106	0.227	-0.001	140	0.349	7 *
08/12-0046	5.1	332	-0.173	0.170	0.002	100	0.274	6 *
08/12-0106	3.7	356	-0.629	0.124	0.005			*
08/10-0130	3.4	298	-0.310	0.112	0.002			
08/12-0145	3.3	239	-0.600	0.126	0.005			
08/12-0200	4.5	293	-0.198	0.143	0.003			
08/12-0235	5.6	308	-0.114	0.187	0.011			
08/12-0305	7.0	309	-0.057	0.240	0.010	200	0.350	10
08/12-0335	7.6	308	-0.068	0.266	0.002	180	0.383	8
08/12-0359	6.5	295	-0.106	0.224	-0.002	190	0.382	8
08/12-0433	5.1	316	-0.204	0.172	-0.007	270	0.413	11
08/12-0503	4.7	307	-0.194	0.157	0.004	200	0.331	10
08/12-0533	3.9	301	-0.241	0.125	0.013	210	0.283	12
08/12-0558	3.7	282	-0.312	0.118	0.008			
08/12-0632	3.0	231	-0.463	0.096	0.009			
08/12-0659	2.0	265	-2.523	0.068	-0.001			
08/12-0724	1.5	274	-4.303	0.054	-0.004	120	0.272	7
08/12-0749	2.7	298	-1.350	0.088	0.005	100	0.281	6
08/12-0834	2.0	295	-2.136	0.068	0.012	100	0.253	7
08/12-0854	2.9	290	-0.700	0.092	0.035			
08/12-0930	3.2	329	-0.572	0.103	0.032	260	0.328	13 *
08/12-0940	3.4	310	-0.519	0.111	0.029			*
08/12-1047	4.6	284	-0.309	0.154	0.021	140	0.331	7
08/12-1243	4.3	276	-0.140	0.137	0.019			
08/12-1400	3.8	299	-0.182	0.122	0.020			*
08/12-1500	4.2	296	-0.250	0.139	0.004			*
08/12-1830	4.3	297	-0.133	0.139	0.019			
08/12-1900	4.5	295	-0.254	0.149	-0.004	140	0.307	8
08/12-1930	5.1	297	-0.053	0.168	0.025			
08/12-1954	5.2	302	-0.053	0.170	0.024			
08/12-2030	4.8	304	-0.012	0.153	0.033			
08/12-2136	6.9	299	-0.009	0.234	0.031	240	-0.113	35 *
08/12-2156	8.6	312	0.000	0.314	0.034	300	-0.255	20 *
08/12-2234	7.3	325	0.016	0.264	0.041	200	-0.292	11
08/12-2304	7.3	317	-0.038	0.274	0.011	140	0.293	8

TABLES-WC

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)	
08/12-2334	5.7	314	-0.161	0.196	-0.013	120	0.333	6	
08/13-0004	5.9	323	-0.156	0.203	-0.015				
08/13-0043	5.3	235	-0.246	0.179	0.014				
08/13-0125	7.1	293	-0.132	0.243	0.012				
08/13-0155	7.4	296	-0.120	0.260	0.012				
08/13-0241	7.4	303	-0.096	0.261	0.024				
08/13-0301	8.1	310	-0.082	0.286	0.023				
08/13-0324	8.4	316	-0.072	0.299	0.025	300	..507	10	*
08/13-0358	8.4	324	0.002	0.292	0.037	230	-0.261	13	
08/13-0429	10.7	329	-0.003	0.400	0.033	200	-0.156	21	
08/13-0456	9.2	322	0.001	0.337	0.036	280	-0.265	18	
08/13-0530	8.8	317	0.009	0.321	0.043	300	-0.350	14	
08/13-0553	8.3	316	0.016	0.283	0.045	380	-0.387	16	
08/13-0700	7.7	308	-0.072	0.271	0.034	310	0.456	11	
08/13-0730	7.7	308	-0.083	0.271	0.029	360	0.509	12	
08/13-0800	8.3	316	-0.097	0.297	0.012				*
08/13-0830	8.0	315	-0.111	0.285	0.009				*
08/13-0900	8.5	315	-0.097	0.308	0.007				*
08/13-1000	11.1	310	-0.019	0.420	0.013				
08/13-1030	11.0	307	-0.022	0.418	0.010				
08/13-1100	10.6	310	-0.025	0.399	0.009				
08/13-1130	10.2	307	-0.032	0.387	0.007				
08/13-1200	10.6	306	-0.031	0.400	0.007				
08/13-1300	10.5	303	-0.022	0.394	0.019				*
08/13-1330	11.1	313	-0.020	0.419	0.017				
08/13-1340	10.6	316	-0.022	0.398	0.016				
08/13-1500	10.2	303	-0.023	0.383	0.017	240	0.408	10	
08/13-1530	10.5	303	-0.021	0.396	0.018	200	0.383	9	
08/13-1600	10.5	306	-0.020	0.396	0.019	200	0.377	9	
08/13-1632	10.3	311	-0.020	0.389	0.020				
08/13-1702	9.8	305	-0.025	0.368	0.017	260	0.413	10	
08/13-1723	10.7	310	-0.021	0.405	0.017	250	0.433	10	
08/13-1753	11.2	308	-0.020	0.425	0.016	240	0.439	9	
08/13-1900	11.9	313	-0.039	0.454	0.015	210	0.567	6	*
08/13-1929	12.0	311	-0.038	0.459	0.016	200	0.557	6	*

TABLES-WC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/13-1929	12.0	311	-0.038	0.459	0.016	200	0.557	6 *
08/13-1949	12.8	312	-0.036	0.494	0.010	200	0.593	6 *
08/13-2035	13.4	310	-0.023	0.518	0.029	190	0.512	6 *
08/13-2100	14.0	310	-0.014	0.540	0.043	200	0.445	7 *
08/13-2125	13.8	310	-0.018	0.532	0.035	225	0.507	7 *
08/13-2252	11.9	310	-0.024	0.456	0.004	360	0.583	10
08/13-2325	11.4	306	-0.024	0.431	0.008	380	0.553	11
08/13-2355	11.1	310	-0.003	0.418	0.036	380		
08/14-0030	10.1	315	-0.033	0.380	0.005	340	0.526	11 *
08/14-0059	9.5	326	-0.055	0.359	-0.013	360	0.615	10 *
08/14-0128	9.5	330	-0.078	0.361	-0.035	380	0.715	9 *
08/14-0157	7.9	332	-0.200	0.286	-0.048	380	0.771	8 *
08/14-0230	7.1	330	-0.267	0.256	-0.057	300	0.703	7 *
08/14-0258	5.3	357	-0.562	0.187	-0.072	380	0.715	9 *
08/14-0358	3.0	312	-2.314	0.103	-0.110	320	0.601	9
08/14-0430	2.4	300	-3.518	0.084	-0.107	320	0.560	10
08/14-0459	2.0	309	-5.031	0.072	-0.117	340	0.554	10
08/14-0528	1.5	319	-6.995	0.056	-0.126	290	0.462	10
08/14-0634	1.2	329	-12.885	0.047	-0.131	240	0.442	9
08/14-0653	2.4	40	-4.276	0.083	-0.143	240	0.538	7
08/14-0735	2.1	76	-4.880	0.074	-0.159	240	0.505	8 *
08/14-0805	2.0	100	-5.519	0.071	-0.163	210	0.483	7 *
08/14-0835	2.5	144	-3.533	0.086	-0.153	220	0.514	7
08/14-0853	3.3	151	-2.221	0.116	-0.151	240	0.607	7 *
08/14-0930	3.8	137	-1.334	0.131	-0.135	260	0.596	7
08/14-1000	2.7	160	-2.536	0.094	-0.134	260	0.537	8
08/14-1028	2.4	148	-3.439	0.082	-0.131	200	0.468	7
08/14-1100	2.1	169	-4.449	0.074	-0.141	220	0.475	8
08/14-1130	1.6	151	-7.005	0.060	-0.146	160	0.405	7
08/14-1200	1.5	161	-6.056	0.067	-0.159	190	0.453	7
08/14-1229	1.6	170	-7.172	0.052	-0.163	190	0.446	7
08/14-1300	1.3	211	-7.239	0.058	-0.165	150	0.461	6
08/14-1326	2.1	233	-5.602	0.076	-0.155	140	0.451	5
08/14-1357	2.2	267	-4.989	0.080	-0.151	140	0.457	5
08/14-1438	3.3	330	-1.330	0.133	-0.133	180	0.529	6

TABLE 3-4C

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
08/14-1453	4.5	311	-1.028	0.160	-0.119	120	0.513	4
08/14-1518	4.3	318	-0.336	0.170	-0.106	140	0.536	4
08/14-1522	4.3	319	-0.348	0.168	-0.104	140	0.532	4
08/14-1554	5.7	321	-0.622	0.203	-0.120	140	0.580	4
08/14-1630	5.9	324	-0.453	0.211	-0.075	140	0.539	4
08/14-1755	9.2	333	-0.122	0.351	-0.039	110	0.530	3
08/14-1830	9.2	335	-0.118	0.352	-0.038	140	0.571	4
08/14-1930	6.3	329	-0.157	0.237	0.001	140	0.423	6 *
08/14-2000	7.2	329	-0.129	0.256	0.003	160	0.436	6 *
08/14-2030	6.6	328	-0.157	0.231	0.010	190	0.445	7 *
08/14-2100	6.0	333	-0.204	0.209	0.008	130	0.389	6 *
08/14-2130	4.4	338	-0.552	0.150	-0.014	260	0.495	9 *
08/14-2230	5.2	326	-0.354	0.179	-0.003	300	0.532	9
08/14-2300	4.9	318	-0.408	0.166	-0.007	230	0.505	9
08/14-2330	4.5	311	-0.264	0.149	-0.003	280	0.391	12
08/15-0000	4.5	307	-0.256	0.149	-0.002	280	0.338	12
08/15-0034	2.9	15	-1.220	0.097	-0.003	280	0.424	11 *
08/15-0101	2.6	306	-1.548	0.085	-0.006	290	0.419	12 *
08/15-0132	3.3	235	-0.943	0.111	-0.005	270	0.443	10 *
08/15-0155	2.9	304	-0.751	0.095	-0.008	280	0.355	13
08/15-0230	2.7	273	-1.025	0.086	-0.013	300	0.368	14
08/15-0300	3.2	276	-0.756	0.104	-0.017	270	0.387	12
08/15-0330	4.0	238	-0.473	0.131	-0.018	300	0.434	12
08/15-0400	4.1	301	-0.436	0.135	-0.018	220	0.392	9
08/15-0423	4.0	297	-0.437	0.133	-0.016	160	0.343	8
08/15-0500	5.3	311	-0.137	0.200	-0.015	170	0.400	7
08/15-0530	6.2	320	-0.163	0.214	-0.017	160	0.407	7
08/15-0633	4.4	11	-0.365	0.146	-0.016	220	0.400	9 *
08/15-0700	2.7	1	-1.547	0.089	-0.015	260	0.424	10 *
08/15-0725	1.5	344	-5.215	0.055	-0.026	260	0.381	11
08/15-0750	0.5	299	-26.346	0.023	-0.003	240	0.253	15
08/15-0830	1.3	232	-5.929	0.050	-0.020	240	0.352	11
08/15-0902	1.9	229	-3.532	0.068	-0.035	210	0.391	9
08/15-0932	2.3	253	-2.653	0.077	-0.032	180	0.382	8
08/15-0957	1.6	221	-4.643	0.059	-0.023	310	0.418	12

TABLE3-WC

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	W* (m/sec)	t (min)
08/15-1123	3.0	180	-0.909	0.134	-0.040	330	0.569	10
08/15-1200	4.1	196	-0.891	0.139	-0.043	335	0.593	9
08/15-1230	4.1	197	-0.394	0.139	-0.043	350	0.603	10
08/15-1253	3.3	186	-1.354	0.111	-0.042	390	0.572	11 *
08/15-1330	3.7	189	-0.992	0.126	-0.037	400	0.590	11 *
08/15-1400	3.6	139	-1.077	0.123	-0.041	380	0.580	11 *
08/15-1430	3.2	264	-1.505	0.110	-0.053	385	0.582	11
08/15-1500	3.0	198	-1.334	0.101	-0.058	400	0.582	11 *
08/15-1530	3.1	139	-1.700	0.106	-0.060	390	0.539	11 *
08/15-1553	4.3	189	-0.791	0.149	-0.053	360	0.627	10
08/15-1630	4.4	167	-0.556	0.152	-0.055	340	0.562	10
08/15-1730	4.1	172	-0.695	0.141	-0.061	370	0.576	11
08/15-1827	3.4	239	-0.948	0.116	-0.052	345	0.512	11
08/15-1900	3.0	245	-1.183	0.100	-0.045	310	0.461	11 *
08/15-1912	2.1	236	-2.363	0.073	-0.047	355	0.438	14
08/15-2003	1.0	212	-12.190	0.042	-0.068	400	0.160	15
08/15-2033	2.4	139	-2.989	0.081	-0.051	440	0.565	13 *
08/15-2059	3.0	140	-1.963	0.103	-0.073	440	0.626	12 *
08/15-2131	1.3	243	-4.232	0.063	-0.033	390	0.483	13
08/15-1327	3.4	239	-0.943	0.116	-0.052	450	0.560	13
08/15-2230	0.3	229	-14.941	0.035	-0.038	460	0.430	13
08/15-2256	2.3	259	-2.655	0.077	-0.075	390	0.503	13 *
08/15-2330	2.4	272	-2.553	0.082	-0.087	440	0.550	13 *
08/15-2357	2.6	231	-3.137	0.090	-0.103	460	0.651	12 *
08/16-0040	2.3	326	-3.655	0.081	-0.036	430	0.524	13
08/16-0100	4.7	317	-0.744	0.163	-0.074	480	0.743	11
08/16-0120	5.0	308	-0.592	0.174	-0.061	480	0.732	11
08/16-0140	5.7	315	-0.447	0.200	-0.060	480	0.766	10
08/16-0200	6.3	317	-0.349	0.222	-0.055	500	0.793	11
08/16-0230	6.7	319	-0.265	0.237	-0.036	500	0.767	11
08/16-0259	7.4	321	-0.211	0.264	-0.037	460	0.776	10
08/16-0318	7.3	316	-0.217	0.262	-0.036	440	0.760	10
08/16-0352	6.9	311	-0.245	0.246	-0.035	420	0.733	10
08/16-0430	6.5	312	-0.272	0.229	-0.031	140	0.717	10

ANGLES-JC

Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	W* (m/sec)	t (min)
08/16-0525	5.5	326	-0.164	0.226	-0.021	450	0.503	12
08/16-0555	6.9	321	-0.153	0.243	-0.023	440	0.533	11
08/16-0630	7.0	327	-0.148	0.247	-0.025	330	0.602	11 *
08/16-0700	11.3	42	-0.071	0.436	-0.023	390	0.536	8 *
08/16-0730	7.3	321	-0.175	0.230	-0.027	400	0.736	9 *
08/16-0754	7.1	315	-0.227	0.253	-0.032	380	0.708	9 *
08/16-0800	7.9	313	-0.150	0.283	-0.020	360	0.590	9 *
08/16-0830	7.8	313	-0.124	0.279	0.002	360	0.616	10 *
08/16-1000	8.6	304	-0.091	0.310	0.001	360	0.616	10
08/16-1029	9.0	305	-0.091	0.342	-0.004	360	0.536	9 *
08/16-1055	9.5	315	-0.073	0.365	0.002	360	0.577	9
08/16-1130	9.4	312	-0.044	0.352	0.000	360	0.554	11
08/16-1200	9.2	312	-0.047	0.346	-0.000	360	0.555	11
08/16-1233	9.2	314	-0.047	0.346	0.000	340	0.545	10
08/16-1430	10.1	315	-0.039	0.383	-0.001	320	0.555	10
08/16-1500	10.4	315	-0.037	0.392	0.000	330	0.533	10
08/16-1530	10.5	309	-0.033	0.398	0.003	280	0.519	9
08/16-1624	11.6	312	-0.025	0.443	0.005	200	0.469	7
08/16-1624	11.6	312	-0.025	0.443	0.005	200	0.469	7
08/16-1700	11.9	306	-0.022	0.455	0.009	300	0.525	10
08/16-1730	11.7	312	-0.023	0.446	0.009	300	0.525	10
08/16-1800	11.9	315	-0.022	0.455	0.008	300	0.527	9
08/16-1830	10.3	309	-0.023	0.389	0.011	300	0.466	10
08/16-1900	10.5	312	-0.023	0.397	0.015	360	0.490	12 *
08/16-1927	11.2	313	-0.008	0.421	0.033	360	0.295	20 *
08/16-1954	10.9	312	-0.017	0.413	0.021	360	0.447	13 *
08/16-2030	10.4	311	-0.075	0.398	-0.013	360	0.753	8 *
08/16-2100	11.5	311	-0.053	0.441	-0.003	360	0.766	8 *
08/16-2130	12.8	315	-0.043	0.493	-0.001	360	0.767	8 *
08/16-2145	13.3	320	-0.034	0.535	0.005	360	0.765	8 *
08/16-2230	12.3	30	-0.051	0.475	-0.011	360	0.730	8
08/16-2250	12.0	37	-0.050	0.464	-0.005	360	0.765	8
08/16-2310	11.4	34	-0.060	0.433	-0.011	360	0.766	8
08/17-0000	13.2	317	-0.042	0.512	-0.007	360	0.792	8 *
08/17-0056	10.1	324	-0.073	0.386	-0.006	360	0.720	8 *

TABLE B-42

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	W* (m/sec)	t (min)
08/17-0130	10.6	327	-0.053	0.407	-0.005	360	0.720	6 *
08/17-0200	12.0	319	-0.049	0.460	-0.005	360	0.753	8 *
08/17-0230	9.1	324	-0.100	0.346	-0.016	360	0.720	8 *
08/17-0245	7.4	325	-0.189	0.263	-0.024	360	0.630	9 *
08/17-0330	7.9	317	-0.161	0.237	-0.026	360	0.703	9 *
08/17-0347	7.9	325	-0.166	0.285	-0.023	420	0.743	9 *
08/17-0430	8.3	321	-0.096	0.298	-0.024	410	0.647	11
08/17-0451	7.6	317	-0.130	0.269	-0.031	460	0.672	11
08/17-0600	8.1	319	-0.065	0.288	-0.003	510	0.581	15 *
08/17-0635	7.9	317	-0.076	0.279	-0.006	600	0.626	16 *
08/17-0705	5.7	322	-0.130	0.194	0.003	660	0.535	21 *
08/17-0735	3.8	349	-0.436	0.123	-0.010	640	0.508	21 *
08/17-0805	2.1	46	-2.099	0.071	-0.039	630	0.497	21
08/17-0835	2.8	24	-1.545	0.092	-0.054	620	0.581	18 *

Ctq

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	W* (m/sec)	t (min)
06/02-1358	4.2	232	-0.492	0.140	-0.068	240	0.443	9
06/02-1428	4.1	232	-0.521	0.138	-0.071	240	0.451	9
06/02-1529	3.6	232	-0.817	0.123	-0.088	200	0.438	8
06/02-1559	3.7	282	-0.389	0.125	-0.101	220	0.475	8
06/02-1629	4.3	282	-0.550	0.144	-0.082	240	0.430	8
06/02-1659	4.5	232	-0.452	0.153	-0.077	240	0.478	8
06/02-1729	3.9	282	-0.580	0.131	-0.073	260	0.455	10
06/02-1759	4.2	282	-0.506	0.142	-0.075	260	0.472	9
06/03-0959	4.9	303	-0.484	0.168	-0.097	350	0.603	10
06/03-1029	4.6	303	-0.413	0.155	-0.070	310	0.510	10
06/03-1059	4.5	303	-0.442	0.151	-0.072	290	0.436	10
06/03-1158	8.5	302	-0.104	0.309	-0.067	210	0.563	6
06/03-1229	7.8	302	-0.109	0.276	-0.057	210	0.511	7
06/03-1259	7.0	302	-0.092	0.245	-0.037	210	0.429	8
06/03-1329	6.3	302	-0.111	0.217	-0.034	290	0.449	11
06/03-1359	5.9	302	-0.125	0.199	-0.031	290	0.429	11
06/03-1429	5.7	302	-0.143	0.192	-0.035	330	0.457	12
06/03-1459	4.8	303	-0.190	0.161	-0.031	330	0.415	13
06/03-1529	4.7	303	-0.228	0.155	-0.035	330	0.427	13
06/03-1559	3.9	303	-0.331	0.128	-0.035	360	0.409	15
06/03-1759	4.1	303	-0.192	0.131	-0.020	380	0.356	18
06/03-1829	5.7	303	-0.140	0.192	-0.034	380	0.470	13
06/04-1025	3.3	303	-1.082	0.112	-0.098	540	0.614	15
06/04-1027	2.9	303	-1.196	0.095	-0.077	540	0.539	17
06/04-1029	1.0	130	-8.285	0.041	-0.098	540	0.441	20
06/04-1100	3.3	313	-1.054	0.112	-0.094	540	0.603	15
06/04-1130	1.3	313	-3.071	0.063	-0.085	540	0.486	16
06/04-1200	2.5	313	-1.626	0.082	-0.074	540	0.510	13
06/04-1336	5.4	313	-0.349	0.189	-0.085	430	0.661	12
06/04-1400	5.3	313	-0.272	0.181	-0.060	480	0.599	13
06/04-1446	5.3	313	-0.198	0.181	-0.041	460	0.531	14
06/04-1516	5.7	313	-0.201	0.196	-0.050	450	0.577	13
06/04-1546	6.4	313	-0.134	0.220	-0.042	460	0.565	14
06/04-1625	5.6	313	-0.336	0.193	-0.033	600	0.740	14
06/04-1659	5.3	313	-0.201	0.218	-0.058	600	0.705	14

Ctd

Date/Time	Wind (m/sec)	(dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
06/04-1929	5.4	313	-0.130	0.220	-0.043	520	0.565	15
06/04-1959	5.1	313	-0.108	0.209	-0.030	520	0.521	17
06/04-2029	6.0	290	-0.109	0.203	-0.028	520	0.507	17
06/04-2059	5.9	290	-0.100	0.239	-0.037	520	0.531	15
06/05-0929	1.7	300	-3.342	0.062	-0.090	350	0.425	14
06/05-0959	2.0	303	-2.644	0.069	-0.083	350	0.439	13
06/05-1029	2.9	303	-1.089	0.097	-0.070	270	0.421	11
06/05-1059	4.5	303	-0.323	0.151	-0.049	270	0.437	10
06/05-1129	5.0	303	-0.305	0.169	-0.051	270	0.431	9
06/05-1159	5.2	303	-0.295	0.179	-0.057	200	0.456	7
06/05-1229	5.2	303	-0.259	0.179	-0.056	200	0.434	8
06/05-1259	5.9	303	-0.104	0.198	-0.024	180	0.342	9
06/05-1329	6.9	302	-0.054	0.239	-0.016	110	0.239	7
06/05-1359	7.4	302	-0.053	0.255	-0.018	160	0.337	8
06/05-1429	7.7	302	-0.038	0.267	-0.012	160	0.313	9
06/05-1625	5.4	303	-0.076	0.181	-0.007	190	0.231	11
06/05-1659	5.7	303	-0.157	0.192	-0.034	250	0.424	10
06/05-1729	5.3	303	-0.107	0.178	-0.016	250	0.344	12
06/05-1759	5.6	303	-0.067	0.185	-0.003	300	0.321	16
06/05-1829	4.3	303	-0.087	0.156	-0.006	260	0.281	15
06/05-1926	4.0	303	-0.192	0.127	-0.011	260	0.300	14
06/05-1951	4.5	303	-0.133	0.147	-0.010	260	0.307	11
06/05-2016	4.2	303	0.028	0.129	0.014	260		
06/05-2041	3.5	303	0.143	0.099	0.022	260		
06/05-2058	2.9	303	0.163	0.081	0.019	200		
06/06-1059	6.0	303	-0.186	0.206	-0.043	320	0.522	16
06/06-1129	6.2	303	-0.153	0.215	-0.042	320	0.509	10
06/06-1253	3.6	302	-0.079	0.310	-0.044	320	0.592	9
06/06-1329	7.9	302	-0.041	0.276	-0.010	320	0.415	13
06/06-1524	7.0	302	-0.057	0.241	-0.005	290	0.389	12
06/06-1559	5.2	303	-0.171	0.174	-0.022	290	0.411	12
06/06-1651	12.9	301	-0.014	0.469	-0.007	290	0.475	10
06/06-1734	4.9	301	-0.169	0.164	-0.017	290	0.384	13
06/07-1259	8.2	273	-0.069	0.293	-0.038	200	0.456	7
06/07-1329	7.4	273	-0.032	0.256	-0.009	200	0.304	11

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Date/Time	Wind (m/sec)	Wind (dir)	Z/L	U* (m/sec)	T* (K)	Zi (m)	w* (m/sec)	t (min)
06/07-1359	6.7	273	-0.031	0.229	-0.005	200	0.268	12
06/07-1459	7.0	302	-0.139	0.243	-0.084	200	0.543	6
06/07-1526	6.5	303	-0.234	0.228	-0.085	200	0.537	6
06/07-1559	6.2	303	-0.117	0.211	-0.032	150	0.357	7
06/07-1629	5.6	302	-0.021	0.222	0.001	150	0.202	12
06/07-1659	6.1	303	-0.023	0.204	0.002	150	0.189	13
06/07-1757	9.4	302	-0.051	0.336	-0.027	150	0.429	6
06/07-1829	7.5	302	-0.017	0.259	0.012	150	0.205	12
06/07-1859	8.6	302	-0.016	0.305	0.009	150	0.247	10
06/07-1929	8.6	302	0.037	0.295	0.041	150		
06/07-1959	7.2	302	0.054	0.238	0.044	150		
06/07-2025	6.3	303	-0.009	0.209	0.026	150		
06/08-0824	1.8	3	-0.464	0.057	0.003	690	0.235	43
06/08-0844	2.0	3	-0.423	0.061	0.005	690	0.246	47
06/08-0904	2.2	3	-0.031	0.064	0.018	680	0.066	173
06/08-0924	1.0	4	-2.232	0.035	-0.009	680	0.263	43
06/08-0944	1.3	4	-1.710	0.045	-0.014	680	0.302	36

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